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Issue 76 • 21 April 1990

NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

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- Bogus VirusX alert
- The Amiga TV studio

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- DrawPerfect is here
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- Football crazy...
- ...joystick mad

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- A column at last!

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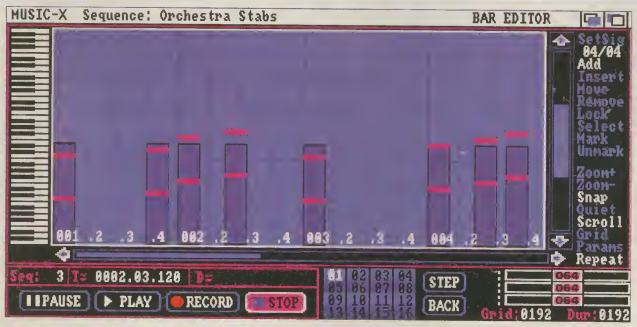

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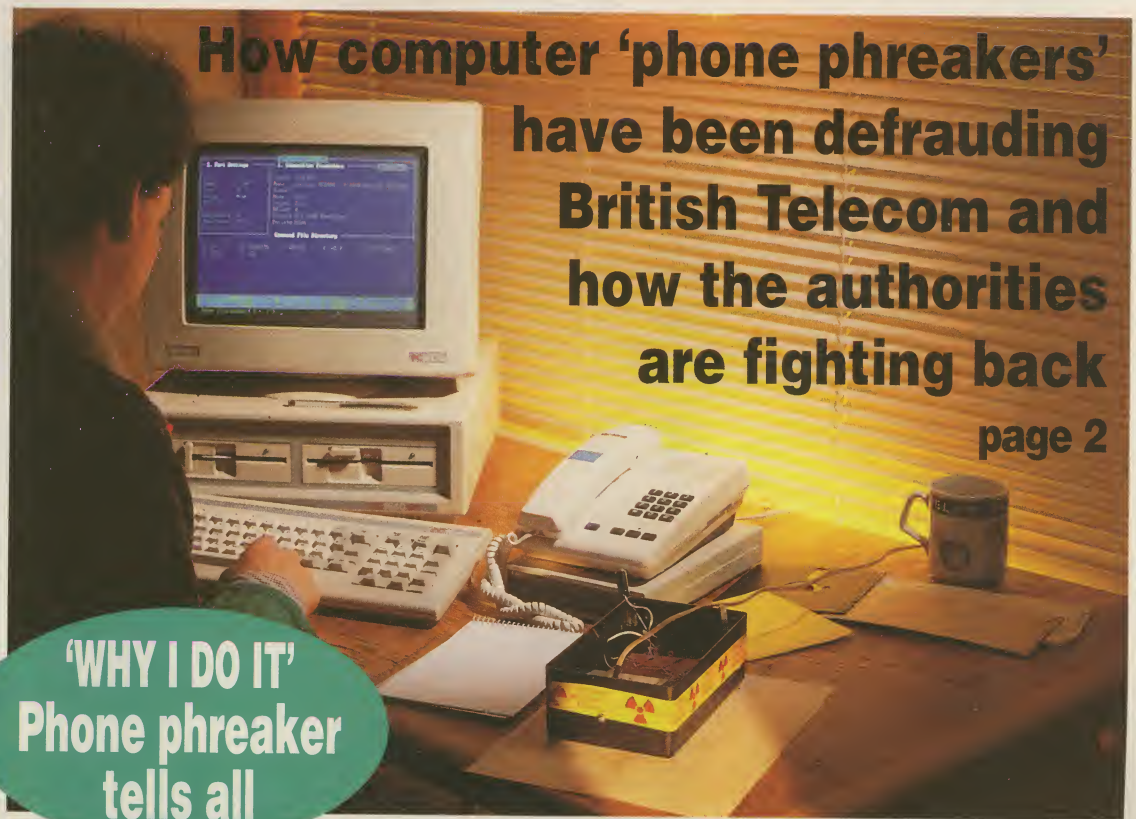

How computer 'phone phreakers' have been defrauding British Telecom and how the authorities are fighting back

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'WHY I DO IT' Phone phreaker tells all

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The buyers guide to word processors page 19

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• Telecom: clamping down on phreakers.

British Telecom, FAST and the poli e w

A special investigation by Colin Campbell, Keith Pomfret and Mark Bennett

What is 'phone-phreaking'?

Twenty years ago, a Californian physics student prepared a leaflet on 'blue boxes', or phone-phreaking as it has become known.

Phone phreakers could take advantage of many anomalies in the US telephone system in order to make free calls. The idea has persisted into the desktop computer age and is widely used by bulletin boards in the US and UK.

US and UK phone systems worked differently, but some of the principles applied in California could be modified for the UK. The best documented and most abused feature is the amount of current required on the line for the exchange to realise that you've picked up the phone.

As you pick the phone up, the exchange waits hopefully for a tenth of an amp to remind it to charge for the call. As your box has removed these milliamps, the exchange doesn't know about it and the call is free.

That's the theory. In practice, long distance lines have a feature that dumps the call if an answer isn't detected within a set time, thus restricting long distance access.

There is a catch of course. If you install a device on your line, it makes incoming calls free but it has no effect at all on outgoing calls. Thus it appears at first to be useful only to the philanthropist or bulletin board operator who wishes to attract callers. Of course, if you and a friend regularly phone each other and each have a blue box, it can save huge amounts of money.

Unsurprisingly, British Telecom does not consider this to be fair use of its resources. If you interfere with the phone lines in this way, you are breaking the law.

To the keeper of a bulletin board, the idea of free incoming calls presents obvious advantages. It means that more callers will be attracted to the board owing to the lack of phone costs.

It is also a way of showing off the board owner's technical prowess, although apparently little expertise is required.

Telecom has other tweaks and equipment to look out for phone call theft, and the latest exchange equipment contains filters to avoid other tricks such as the sending of certain tones down the wires to obtain free usage. These filters are attached to 'squawkers' which alert Telecom to the imminent fraud. British Telecom is working on ways to prevent and detect phone phreaking, and soon it may well become a thing of the past.

What phreakers use

Not a lot really. A sprinkling of resistors, a diode or two, a switch and an LED to remind the user that all is well. It looks a shade more elegant if mounted on a printed circuit board and welded into a little plastic box, but it doesn't need to be.

There are also other telephone piracy devices such as a hefty tone generator to send 'magic' tones down the wire. ■

Why do they do it?

Following the arrests, *Express* spoke to one phreaker who was most keen to talk about the practice. Here is his revealing explanation:

How can you justify defrauding British Telecom?
Because BT overcharges. I look upon it as an intellectual challenge.

How long have you been phreaking?
Quite a while. So long I can't even remember.

At the beginning of last year I really made it work effectively, but I had known about it for approximately a year and a half.

Where does it work?
Mainly on British Telecom's digital

lice warn computer-based lawbreakers that their days are numbered

PHREAKERS AND PIRATES FACE TOUGH CRACKDOWN

FAST, the police and British Telecom have fired a warning shot across the bows of bulletin board operators and computer users who are involved in software piracy and the practice known as 'phone-phreaking'.

This follows the extraordinary series of dawn raids on Thursday April 5 in which 13 people were arrested in connection with telephone fraud (reported in *Express* 75).

As yet none of the 13 has been charged – all have been released on police bail pending further enquiries. The police say the matter is "extremely complicated" and warrants detailed further investigation.

RAIDS

Police raided premises around the country, and made arrests in Glasgow, London, Liverpool, Newcastle, Sunderland, Worcester, Dunstable and Luton.

All those arrested are male and aged between 18 and 40. A number of PCs, some electrical equipment and software have been seized and are being held by the police.

The raid was the culmination of a nine-month investigation, named Operation Southall, into telephone fraud committed through the use of electrical equipment. This practice is thought to be costing telecommunications companies millions of pounds per year, with British Telecom being the largest loser.

Operation Southall had been initiated by British Telecom's Special Investigation Unit in conjunction with FAST (the Federation Against Software Theft). Both had worked on the premise that the suspected 'phone-phreakers' might also be involved in large-scale software piracy through bulletin boards.

However, it is not yet known if any of the software held by the police is illegal. All the packages will be inspected over the coming weeks.

WARRANTS

Police were brought in a few weeks prior to the raids in order to organise search warrants under the Forgery and Counterfeiting Act which also covers electrical fraud.

It is understood that one of those arrested was the system operator of a leading bulletin board, although neither FAST nor the police were prepared to confirm this.

Speculation is growing that the other 12 arrested had used the board at some stage. Again, no official body could comment on the matter.

FAST has taken the opportunity to warn bulletin boards once again that they cannot hide from the law. The anti-piracy movement has, until now, found rogue bulletin boards an almost inpregnable enemy.

IMPOSSIBLE

Operations manager Robin Lawrence told *Express*: "We find that bulletin boards are almost impossible to monitor, and those involved in piracy usually deal in leisure software.

"Illegal software dealers are often selling more expensive business software and, while we're spending a lot of time investigating piracy of leisure software, it's obvious that the illegal copying and distribution of a £600 word processor is more serious."

He said that bulletin board owners indulging in illegal practices would "certainly be made to think twice" following the raids.

A police spokesman said that it would be supporting in full a crackdown by British Telecom on telephone fraudsters and Telecom itself says it will be continuing investigations. Further arrests are expected. ■

A second opinion

There are 300 or so privately-owned bulletin boards in the UK. Most of these are run by hobbyists who put a lot of work into providing a service.

There is little doubt that the majority of bulletin board owners and users are entirely honest. However, there are rogue operators in the BBS world just as there are in any group of people.

An anonymous sysop (systems operator) of a UK bulletin board who admitted to using phone-phreaking devices told *Express*: "I am a responsible bloke offering a service to my users. If there is anything I can do to help get back at Telecom for their gross accounting then I will. All of my regular users know about the on-line discounting device, and since I installed it my call rate has trebled, especially during the daytime." ■

COMMENT

Most of us regularly face that dreaded moment when the blood chills, we open the Telecom envelope, gasp at what must surely be the national debt of San Seriffe, then reluctantly reach for the cheque book.

Particularly in view of recent reports on alleged overcharging, many Telecom users will feel at least a sneaking sympathy with the 'phone phreakers' we describe here.

To condone the practice would, however, be quite wrong. Even leaving morality aside, there are two purely pragmatic reasons for refusing these people our support.

Telephone fiddlers are not modern-day Robin Hoods, stealing from the rich to give to the poor. They are not ripping off faceless shareholders but rather every honest phone user, because the cost of their activities is inevitably slapped on to our bills.

Secondly, the phreakers do all law-abiding hobbyist computer users a disservice by once again bringing the whole area into disrepute. Already convinced that computers enslave child addicts, and that the land is rife with crazed hackers who spend their lives trying to launch nuclear missiles or make the banking system collapse, the proverbial punter on the Clapham omnibus will take comms fraud as yet one more sign that the micro is a threat to society as we know it.

doit? A long-time phone phreaker talks frankly to Express

exchanges – London and major cities.

More places are coming in all the time as BT extends its network by adding digital telephone exchanges.

It seems to be a design problem with digital exchanges.

And all you need is a touch-tone keypad to do this?

Yes, you can go down to most electrical equipment suppliers and buy one for £10-£15, or you can buy similar equipment abroad for a fiver.

Or you can even use some types of computers, it all depends on what type of sound generation they can do – you need to generate two frequencies at the same time.

Quite a lot of people used to use Commodore 64s to do this. They would create the tones and record them on small cassettes and play them back into the phone.

What's your reaction to the recent press about phreaking and the arrests?

It's a little bit upsetting, but, well, these things happen, the more people who know, more of the chances of it being leaked to the police.

Does this trick work in other countries?

It works in places like Vienna, parts of Sweden, and Paris although modifications are needed. And it works in an awful lot of American cities as well. That also needs some special modifications to the technique to allow it to work.

Then, of course, there's the trick in the Netherlands, where you don't have to know anything except for the correct telephone number. You just go in and put a coin into a certain type of telephone and just touch-tone the telephone number you want.

The PTT in the Netherlands know about it and have changed all their own phones but have left those in restaurants and whatever alone.

How do you imagine British Telecom stopping this?

I can't see how they can really stop it that easily.

I would hazard a guess, and another contact of mine has checked this, that BT reckons it would take approximately four years to fix it, and by that time there will be another variation.

I think BT will basically put a squash on it, make sure there's not a lot of publicity and hope people forget about it. If they make a lot of fuss about it to start off with, people will get so paranoid about it that they'll stop doing it.

It's a somewhat implausible explanation that you only do this for the intellectual challenge. What is your real motive?

To save on telephone costs. It has just been proven that BT has the highest charges for international calls anywhere. It also lets me keep in touch with other hackers and lets me exchange information.

Express contacted this phreaker through an intermediary, and his identity is not known to the magazine. ■

Video Toaster near launch

A $1,600 Amiga peripheral that can do the job of $65,000 worth of broadcasting equipment is currently waiting for type approval from the Federal Communications Commission (FCC).

The Newtek Video Toaster is a switcher, dual frame buffer, still store, character generator and video effects station at a fraction of the price of conventional hardware.

Newtek has been involved in Amiga video-related add-ons since the machine's introduction five years ago. The firm is confident of FCC approval and is ready to ship 4,000 units as soon as it comes through.

Bad news is that it only supports the American NTSC television standard and would be useless in a British studio, which uses PAL. But with a saving of $63,000 per unit, it shouldn't be too long before someone makes the conversion to PAL. ■

Panasonic's read/write optical disk

Panasonic has entered the field of read/write optical disk systems with the LQ-4000, a Videodisc machine that can use the same disk for up to ten years, reading and writing to it up to a million times.

The LQ-4000 is being bundled with *PC-Album* software for the creation of video databases, and has two modes giving 60 minutes of 400-line resolution video or 40 minutes of 450-line resolution. The higher resolution holds some 72,000 frames, displayable at 30 frames per second.

The multimedia applications of the LQ-4000 are limitless, as instead of being tied to a particular brand of hardware it can be accessed by its standard RS232C port.

This means that it can be controlled by any computer which posesses a serial port.

Due for release in the autumn, there is no set price as yet, but it will certainly not be a budget item. ■

MacTraining

Mac users can now benefit from an interactive training package called 'The Mac Learning series'.

Apple has put together five modules which need a Mac, printer and an audio cassette player to run.

The modules are: Basic Mac Learning, HyperCard 1, HyperCard 2, and Word 4 Parts One and Two. The first three cost £59.95 and the last two cost £69.95. Details from any Apple dealer. ■

Business managers' top fear is loss of data

HACKERS ARE BIGGEST DANGER TO INDUSTRY

Britain's captain's of industry now regard hackers as the greatest threat to their companies' well-being according to a survey published this week.

Top pollster MORI and Securicor asked 200 business managers what they regarded as the greatest risk to their businesses. 41 per cent said data tampering was their biggest worry.

The 200, chosen from all fields of business and industry, were asked to choose three out of four possible catastrophes which could befall a company.

Hostile takeovers, as always, play on the minds of top business people, but for the first time computer data protection is seen as a top priority.

Nearly 15 per cent of the respondents said they had already suffered at the hands of computer hackers. All of the business sectors identified saw hackers and viruses as the biggest danger.

Other top risks were hostile takeovers (35 per cent), product protection (26 per cent), natural disasters (22 per cent) and fraud (16 per cent).

All said that the risks to computer data had increased over the past five years.

Securicor Consultancy's chairman Sir Colin Woods said: "The great benefits that computer technology have brought to every area of our lives also have a cost, not the least in the damage that can be caused if computer security is breached.

The firm's computer director, Roger Teal, has called for the introduction of screening for employees who will be working with computers and sensitive data. ■

Elite backs arcades

Veteran software publisher Elite has pulled off something of a coup with the acquisition of three major arcade licences from Sega.

The three games will be Elite's first arcade conversions in two years. The company quit spending money on coin-ops two years ago because of "over-crowding" but has now "re-assessed the current and future leisure software market".

All the games will be ready for most major formats by early winter. They are *World Championship Soccer*, *Tournament Golf* and the beat-'em-up *Last Battle*.

The games fared well in the arcades with state-of-the-art graphics and sleek gameplay. ■

• Last battle: *Elite connection.*

• *Dialguard: restricted access.*

Hardware hits hackers

Hackers beware; Comms Direct has launched Dialguard 256, an on-line device to restrict unauthorised use of modems.

The unit sits between host and modem, and monitors attempted access to the computer system.

It intercepts incoming calls and checks the user's security code before allowing them through into the system. It can be configured to either connect to the host or ring the user back.

In the ring back mode, it will call back a pre-stored number which matches the user password.

No price is available yet but further details can be obtained from Comms Direct on 0923 58602. ■

Mirrorsoft deal

Mirrorsoft has once again agreed to sell Cinemaware's intriguing games on this side of the Atlantic. The American firm will be continuing with its interactive movie type affairs as well as a few flight and sports simulations. ■

Piracy dongle

An anti-piracy anti-virus dongle with supporting software will help to eliminate unauthorised copying of software.

Activator-S from Software Security of Stanford Connecticut is a software supported hardware 'key' the size of a box of matches. It will allow software to be copied, but that software will then only run on the machine that it was copied from.

In a business environment, a network of PCs could have the same identity, allowing transfer of software within the network.

The price is £40 per unit and Software Security is on 0784 430060. ■

Coupé direction

Comprehensive soccer management game *Football Director II* is to be launched for the SAM Coupé.

The game, from strategy specialist D&H Games, will be available within the next few weeks on disk and cassette for £19.99. Call 0462 816103. ■

Aircraft computer errors could cost lives claim pilots

On-board aircraft computers are once again under investigation following reports of serious malfunctions which could have caused a number of major disasters.

The new British Airways 747-400 is widely regarded as one of the best passenger airliners in the world. However, the aircraft has been suffering from a faulty autopilot computer.

According to *The Times* a computer closed the throttles on all four engines of the aircraft on six different occasions. Quick-thinking pilots had to quickly switch from autopilot and override the computer's decision.

All the incidents occurred when the aeroplane was nearing the top of its take-off climb. The computer had wrongly calculated that it was time to close the throttles on the engines. The pilots noticed the throttles being closed and turned the computer off.

Boeing and British Telecom say the software has been modified and the computers have a 100 per cent reliability rate. The failures which occurred between October and February lead to an investigation which found that a "printed circuit logic card was giving out spurious information".

Investigations by the Civil Aviation Authority in the UK and the US Federal Aviation Administration in the US continue. Similar problems have been reported by airlines.

Pilots meeting at a convention in Washington in America have expressed concern over the safety of computers.

Three weeks ago Mark Young, the head of the British Airline Pilots Association , said that computers "fail and often give misleading information." He called on board computer failure "an everyday occurrence".

One pilot in Washington commented: "Aircraft now rely so much on computers that the growing number of incidents about software malfunctions are becoming of growing concern. We need to be certain that these computers are totally reliable."

Bold experiment aims to produce understanding

A MICRO FOR EVERY CHILD IN THE CLASS

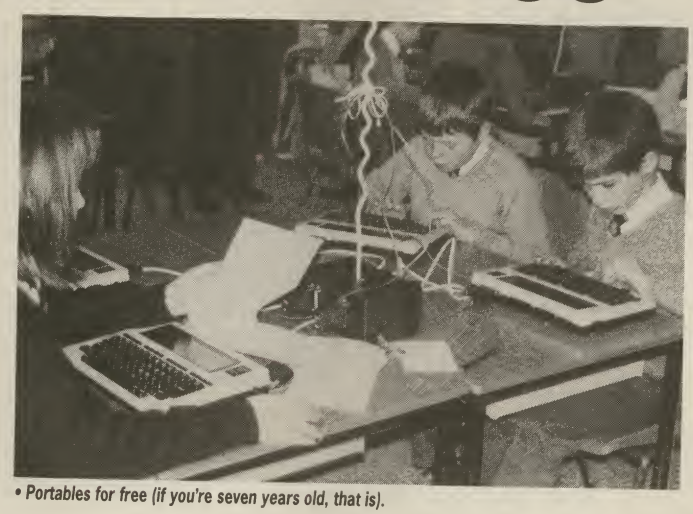
A class of 24 primary school children has been given a Tandy 102 laptop computer per child in an experiment organised jointly by Tandy and the Scottish Council for Educational Technology.

The micros will be used for classwork, homework and field projects, and will be hooked to a host computer in the classroom for children to hand in their work via the serial port.

Children from St Joseph's RC Primary School in Stranraer in southern Scotland were chosen in a scheme to discover the outcome of unrestricted access to a computer for them. The main reason for choosing primary children was because they share the same projects and the classes stay together for longer periods.

The computers have been issued to the children who can take them home and will retain them through their school career, eventually taking them on to senior school.

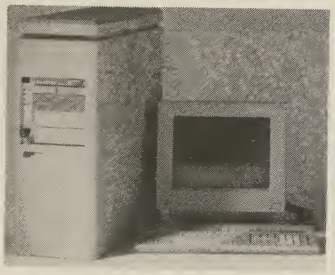
Special communications software will allow the transfer of work to the existing Acorn BBC machines that the school has been using previously.



• Portables for free (if you're seven years old, that is).

Graham Brown, spokesman for Tandy said: "The kids will keep the computer in the same way that they'd keep an exercise book, inputting lessons, projects and homework.This exercise will go a long way toward helping these children become computer literate at an early age."

The experiment should go on for a several years and the Scottish Council for Educational Technology says it will be watching the results with interest.



• AMT 486: pick of the chips.

Fastest ever 486 PC clone

AMT claims to have launched the world's first 33MHz 80486 PC after examining 25MHz chips and selevting which ones ran faster than their rating. The extra turn of speed makes the machine the fastest ever PC.

The technique is based on the fact that component manufacturers label their chips to speeds based on statistical data rather than individual testing. Individual testing picks out the chips that maintain data integrity at higher speeds.

The £8,000 PC comes with VGA colour monitor, 140Mb hard disk, a choice of 3.5 or 5.25-inch high-density drives, 2Mb of RAM and six free expansion slots.

The main system unit is floor standing and AMT is starting to ship them this week. For details call 01-450 3222.

Miniature Music X

A new version of *Music X – Music X Junior* – is being released by Stateside publisher Microillusions.

Aimed at the home user and hobbyist rather than the studio pro, *Music X Junior* is a scaled down version of the original *Music X* MIDI studio with some of the bells and whistles removed. Usefully however, it retains the same file format so upgrading will be easy.

The original *Music X* is upgraded to version 1.1 with version 2.0 planned in a couple of months. Extra features planned are an effects pedal editor and a patch editor construction kit.

UK prices have yet to be announced.

Lighten up

Commodore 64 owners will soon be able to get down to some computerised gun slinging thanks to the launch of a new light phaser.

Virgin's Magnum Light Phaser, available this week, costs £29.99 and comes with five specially configured games. They are coin-op classic *Operation Wolf*, *Gunslinger*, *Ghost Town*, *Goose Busters* and *Baby Blues*. Buyers of the light gun will also be offered the chance to win lots of goodies including records and audio Compact Discs.

The Magnum is already available for the Spectrum and CPC.

Porgy on PC

George Gershwin, one of the great tunesmiths of the 20th Century, has come to computers.

Many of his works had been recorded onto pianola rolls which the composer cut himself in the 1920s. These fragile paper rolls are too old to actually be played. However, Gershwin scholar Artis Wodehouse has converted the holes in the rolls to MIDI format.

Using an scanner she converted the holes into computer files and then played the music through a synthesiser. Works by Rachmaninoff and Debussy could be converted in the same way.

Drawn out

WordPerfect has launched a new business presentation graphics product for the PC – *DrawPerfect*.

The program enables the creation of overhead transparencies and 35mm slides which can be prepared and presented on the screen.

There's also a library of 500 art clippings for the creation and editing of graphics.

***DrawPerfect* files can also be imported directly by *WordPerfect*.**

It costs a hefty £425. Talk to the good people at WordPerfect on 0932 231164

Virus for sale

The American hacking magazine *2600* announced in its most recent issue that it has for sale the decompiled source code of the notorious 'worm' which made its way through the Internet computer system, *writes Mark Bennett*.

The magazine says it will sell the code for just 10 dollars to any interested parties. In November 1988, the program was accidentally released by Robert Morris Jnr into the Internet system causing widespread damage. Since then the source code has been closely guarded by security experts who have been examining it.

However, *2600* has decided to release it to those people interested in such programs on a professional level. This has caused some concern in the computer security community, but supporters say it is merely an academic exercise. Anyone buying the worm code could have it running within a weekend. Luckily, most major systems will be protected from such an old program. ■

Novell and Lotus merge

Two of the world's most important software companies have joined forces to become, arguably, the biggest software company in the market.

Lotus, which made profits of $556 million on its sales of business software last year, is to merge with networking market leader Novell. That firm posted fiscal revenues of $422 million. Novell will become a wholly-owned subsidiary of Lotus, producer of *1-2-3*, the top-selling spreadsheet.

The two boards of directors will be combined with Jim Manzi continuing as chairman, president and chief executive officer of the whole caboodle and Ray Noorda taking up a new post of vice president of Lotus while continuing as CEO of Novell.

"Lotus and Novell come together with successful heritages, each with leading products in its principal markets," said Noorda. "We now represent approximately 10 million Lotus users and 5 million Novell users."

Both companies will be merging their impressive research and development programmes for future software projects. ■

Adventurers vote Level 9 tops for the fifth year

ADVENTURE AWARD FOR LEVEL 9 TEAM

Level 9 has taken the coveted Golden Chalice Award for the fifth year running in the 1989/90 Adventurers Club Awards. Its game, *Scrape Ghost* (all formats) helped to secure the top award again

The awards are voted for by members of the Adventurers Club Limited, and reflect the appreciation of the end users of the adventure games.

The Silver Chalice went to Horrorsoft for *Personal Nightmare* (ST and Amiga) and the Bronze Chalice went to Sierra/Activision for *Manhunter New York* (all formats). Extra accolades were collected by Origin/Mindscape for best role playing game with *Ultima V*.

Electronic Arts was honoured as best national software company for its prolific support through the previous 12 months.

A fellowship of the Adventurers Club was awarded to Anita Sinclair of Magnetic Scrolls for services to the cause of adventuring.

Finally, mail order software house of the year went to Zenobi for the second year running. ■

• Level 9: another winner

Newtron laptop launched

Newtron has launched a lightweight CMOS laptop which runs at the speed of a turbo XT. It costs £699

The Newtron Veridata TL110 weighs under seven pounds and features 640K of RAM, DR-DOS 3.41 on ROM, a back-lit LCD display with timeout feature, a 1.44Mb 3.5-inch disk and a removable battery pack.

It can charge two battery packs simultaneously, one at the fast 90-minute speed and the other at a more gentle trickle for 16 hours. The computer, leads, charger and manuals will fit into a standard briefcase but there isn't much room left when they're in situ. For more details phone Newtron on 0482 870036. ■

• Newtron Veridata: lighten up

THE WORLD AT YOUR KEYBOARD

Mindscape is to launch *World Atlas* for the PC. It incorporates 240 detailed colour graphics which can be displayed on a standard EGA or VGA monitor, an almanac and a book of jolly interesting world facts.

For £59.99 users can view each country with colour highlights detailing various topics ranging from politics, economics, and climatic data, to environmental information and communications structures.

Mindscape says *World Atlas* will be invaluable to travelers, teachers, business people, librarians and, travel agents as well as interested browsers.

Call 044486 545 for more details. ■

The National beats the form

Computer tipster's predictions for the recent Grand National proved to be as far out as those of the nation's bookies.

Two weeks ago *Express* asked the makers of *Coursemaster, National Hunt Formula, Form Master, Racing Box* and *Tipster* to make their electronic predictions. Three said Call Collect would win (it finished 7th), one tipped an each way bet on Bishops Yarn and Nick the Brief (neither ran) and another backed Big Sun (came 6th).

Other computer favourites were West Tip (which came in 10th) and Bonanza Boy (16th).

Intraset's *Coursemaster* was closest. It said Brown Windsor would come 3rd (4th) and backed Durham Edition to come in 4th (2nd). It also reckoned Rinus would do well (3rd).

Even so, it's ever-so-slightly unfair to judge any of the packages on the basis of the Grand National. The race's popularity is based on its almost total unpredictability.

No computer, however sophisticated, will ever change that. ■

NEW COMPUTER EXPRESS

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We regret we cannot enter into any personal correspondence or answer telephone queries. Technical enquiries should be addressed to Tech Tips at the address below.

ABC audited circulation July-December 1989: 22,277 copies per week

Future Publishing Ltd • 30 Monmouth Street, Bath BA1 2AP • Tel: 0225 442244 • Fax: 0225 446019 • Subscriptions: The Old Barn, Somerton, Somerset (0458) 74011
• Printed by Redwood Press, Melksham, Wilts
• Distributed by Comag, West Drayton, Middx

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VISA

VIRUS WAR UPDATE

A bogus version of Steve Tibbet's acclaimed Amiga virus killer, *VirusX* has recently appeared and is being distributed under the name *VirusX* 4.4.

Although the bogus version is not written by Steve, it is nothing to worry about. *VirusX* 4.4 is a *VirusX* archive that has been slightly modified by somebody who obviously doesn't know the first thing about C or the Amiga.

The archive includes a `VirusX.DOCS` file that has a new virus appended to the documentation, has a longer description of this virus appended to the source file, had some punctuation moved around in the source file and had the 4.00 version number bumped up to 4.40.

If you do have this release, dump it straight away and get your hands on an official release of Steve's virus killer. This is the second time that Steve has suffered at the hands of such people as many of you may remember when a rogue version of *VirusX* (version 3.3) was modified to actually write viruses!

Steve is currently working on a new version of *VirusX* that includes a few new features and has been updated to cope with viruses that have appeared since the release of 4.00. Look out for this within the PD libraries soon. Thanks to Tony Miller at 01-For-Amiga.

PICTURE THIS!

ASDG Incorporated has announced the release of *The Art Department*, a new full-featured, 8- and 24-bit image processing system that incorporates the fastest image rendering and conversion technology available for the Amiga (the good people's words, not mine).

In addition to its long list of special effects, *The Art Department* (catchy name that) can create magazine-quality colour separations from virtually any image source with up to 24 bitplanes (16 million colours).

Useful for colour desktop publishing and layout, *The Art Department* produces 12- and 24-bit colour separations compatible with ASDG's *ReSEP* and Gold Disk's Amiga industry standard Desktop publishing system, *Professional Page*.

The Art Department is also of special interest to graphic and video artists who use 3D modelling software such as *Sculpt 4D*, because it converts 24-bit images to Amiga-displayable images faster than otherwise possible within any of the packages currently available.

The program uses a modular file loading interface and comes with two modules as standard – a *DigiView* 21-bit loader and Super-IFF loader, supporting just about any IFF file with up to 24 bitplanes. Formats supported by Super-IFF include Extra Halfbrite, HAM, AHAM, SHAM, ARES and NewTek's new Dynamic HAM and HiRes file formats.

The Art Department sports a wide range of image processing tools, including the ability to perform colour to grey scale conversions which can actually add resolution to images. Highly precise and fast image reduction and enlargements are also possible.

A1000 SAVED AGAIN

With the release of the Enhanced Chip Set and Kickstart 1.4, A1000 users looked set to be in for bit of a raw deal.

According to Commodore, both the ECS and 1.4 will not work on the 1000, therefore forcing those users who had enough faith in Commodore to buy the machine in the first place, to look towards selling up their kit in favour of the A500/B2000.

Not content to let Commodore get away with such a despicable act (seasoned Amiga owners have a soft spot in their hearts for Commodore's original Amiga), several companies have announced the release of 'rejuvenator' boards that promise to inject new life into the A1000. Latest arrival is the Pheonix board from Phoenix Microtechnologies.

The Phoenix board provides significant enhancements for the Amiga 1000, bringing it up to and beyond the level of a standard B2000. The board provides complete support for the Enhanced Chip Set, offers up to 2Mb of RAM to be installed onto the A1000 motherboard, a real-time clock and calendar, software switching of the A1000 audio filter, multiple Kickstarts fitted internally, up to three floppy drives fitted internally (with the addition of a larger case), internal socket for the addition of a 68881/68882 maths co-processor, and an Amiga 2000 compatible video and expansion slot.

The cost of this board is expected to be around the £500 mark which also includes 1Mb RAM expansion. If you want to keep up to date but don't want to sell your A1000, then the Phoenix board is definitely a must.

For more info, write to Pheonix at 18 Hampton Road, Keswick, South Australia.

Jason Holborn

PLAYING TIP

WEIRD DREAMS

Keep having recurring dreams? Stuck on the same level on Rainbird's strange nightmare 'simulation', that is?

Well all you have to do is walk halfway into the mirror on the right and tap out SOS in morse on the Help key. Now just press Help to skip levels.

Neil Ratcliffe,
Burton on Trent, Staffordshire

KEYBOARD SHORTCUTS

Although the Amiga Workbench is very much mouse-based, it is possible to carry out most operations through the use of keyboard shortcuts. Below is a list of the more common shortcuts available. Thanks to I Pearce of Thame in Oxfordshire for the tip.

Right Amiga + X	Clears the currently active string gadget
Right Amiga + Right Alt	Same as pressing the right mouse button
Right Amiga + Right Alt + Cursor key	Moves mouse pointer
Left Amiga + Left Alt	Same as pressing the left mouse button
Left Amiga + Left Alt + Cursor Key –	drags selected icon or window around screen
Left Amiga + V	Selects RETRY gadget on a system reguester (even if mouse pointer is not over it).
Left Amiga + B	Same as above, but selects CANCEL gadget.

DIGIPAINT GETS ANIMATED

Mindware International has announced the release of *DigiMate* 3, an add-on product for NewTek's acclaimed paint system, *DigiPaint 3*. *DigiMate 3* (whatever happened to *DigiMate 1* and *2*?) allows the creation of animations using imagery created using *DigiPaint 3*.

These animations are stored in standard IFF ANIM format, therefore allowing them to be imported into other animation systems with ease.

***DigiMate* runs under an advanced message passing system called T.A.S.S, which allows the interaction of multitasking programs.**

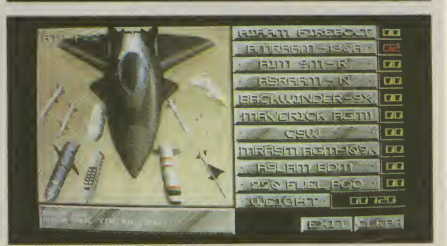
No longer do your animations need to be restrained by the amount of memory available. *DigiMate* uses an exclusive DiskANIM system that allows animations to extend the capacity of your hard drive.

Features include powerful picture conversion tools which allows any picture (regardless of format) to be converted to EHB, 32 colours, HAM and ovescan.

F–29 RETALIATOR

AMIGA GAME of the WEEK

Ocean • £24.99



After much anticipation and five months delay, Ocean's long-awaited flight combat simulator has made its way into the shops. So what's it got to make it special? Well read on...

The game starts off with a series of futuristic intro screens as you enter your pilot details into the flight computer. Once the computer has your computerised ID image and information in its memory you are ready to take flight.

You have the choice of flying one of two jets – the Lockheed F-22, a cousin of the F-19 Stealth fighter or the still experimental Grumman F-29 (hence the game's title) – in one of four different battle environments. Various missions are on offer depending on you piloting and fighting skills, each increasing in difficulty as your abilities improve. Once all the options have been set, it's time to strap in and take off.

The flight section of the game is where *F-29* comes into its own. A myriad of viewpoints and control options are available to the player, as in the much acclaimed *F-16 Combat Pilot*, but Ocean's release has polished the options until they dazzle.

The views are incredibly realistic all round, utilising the speediest and most breathtakingly-filled 3D yet seen on the Amiga. Every object, from the dusty rock formations in the desert through to the brilliantly detailed ground targets to the flames from your air-to-ground missiles, looks totally realistic.

Sound, too, has been used to great effect, with superb jet noises echoing off the scenery and varying levels of explosive effects when the battles start adding to the already convincing atmosphere.

As far as gameplay is concerned, *F-29 Retaliator* knocks other flight sims into a cocked hat. The control of the plane has an absolutely wonderfully fluid feel, with just enough feedback to keep you on your toes and still be controlable for the novice. The superbly-designed manual helps, being full of useful maps and information to tie in with the game perfectly. Forget *Fighter Bomber*, forget *Interceptor*, this is the one to go for!

Maff Evans

HYPERCHART HITS HOME

Despite more pre-announcements than the year of multimedia and the year of the consoles combined, Atari's UK presentation graphics package *Hyperchart* has just arrived.

Despite the belated appearance of this mighty package – so meaty, beefy, big and bouncy, it comes on six (count 'em) disks – its presentation of 'boring' facts and figures really does lend a much-needed shot in the arm to any write up.

The wonder of the program is that it accepts data from most spreadsheets and enables you to turn lists of data and columns into brash and arresting graphs and charts. It will appeal in particular to businesses, teachers and anyone who needs to create vivid displays, rolling demos or interactive demonstrations. And using *Hyperchart* you can also create professional-quality 35mm slides, via a bureau service.

Hyperchart, from Atari UK on 0753 33344, costs £130.

ALL THE FAX

You'll have seen a news item in *Express* about Fast Fax, a new ST hardware-cum-software solution to the problem of transmitting and receiving messages on paper (other than snail-mail, of course).

Michtron's way around the problems of cost and complexity centres on a device linked to your ST and software that enables you, with a simple click or two of the old mouse, to send a fax, schedule transmission for non-peak time rates, receive faxes as disk files for reading on-screen, printing out or loading into graphics format as .IMG files for display in a graphics package.

The software – a 90K memory resident program – also features a 1,000-address phone book, transaction reporting, storing of received transmissions and ability to save faxes as .IMG files.

Perhaps the only drawback for most of us is that Fast Fax costs £693.50: from Microdeal on 0726 68020, or fax 0726 69692. Still, for that you get a complete faxing solution that makes best use of your ST's organising abilities. If you need to buy a fax anyway, just think of the added kudos of having it linked to your computer!

ART ATTACK

A fortnight ago *Express* reviewed four brand new ST art packages. Now another has come along, this time with particular appeal to youngsters.

The £15 program *Arty Junior*, a bright and cheerful introduction to the world of ST graphics, is available from Zeal Software on 0952 593345.

And news reaches me of an exciting project under development in Canada. ISD Marketing is said to be working on an art package that manipulates vector graphics to enable the user to create some spectacular effects combining text and images. More details as I get them.

2ND MANUAL DRIVE

Anyone who has seen *Your Second Manual* will agree with me that it encouraging newcomers still at a bit of a loss about all this ST business to get hands on a copy is a worthwhile pursuit.

Good news, too: HiSoft has acquired the rights. At £14.95 it's perhaps somewhat on the stiff side, but on the other hand it remains a good deal cheaper than most games. Phone HiSoft on 0525 718181 and order yours now!

A GOOD DEAL MORE

Warmest congratulations to Richard Austin and all at Evesham Micros on winning the award for 'Atari Dealer of the Year 1989.' And a personal word of commendation from yours truly.

I recently sent two STs to Evesham for repair, and was pleased at the speed and efficiency of the service. If you too have a sick machine, call 0386 765000 and get an estimate.

SECOND PIN PLUG

What, you mean to say you have yet to buy your copy of *ST Format*, Britain's best-selling – and though I say it myself, best magazine for the ST – which is available now from all good newsagents?

If you don't get your skates on you'll be missing out on a cover disk that features the full version of GFA's superb 512-colour *Raytrace* program (no, not a demo: the full thing), as well as a fully useable demos of *Wipe Out*, *Devpac 2* and *Personal Finance Manager*. And that's before you've opened the cover!

The second blatant plug this week concerns the item above about Evesham winning the Atari Dealer of the Year award. If anyone out there has had experiences, good or indeed (God forbid) bad, with ST repair companies, I'd appreciate it if you'd drop me a line. Write to: Steve Carey, *Express*, 30 Monmouth St, Bath BA1 2AP.

EXPRESS OFFER

If you're about to upgrade to the STE, or know someone about to buy one, halt for a moment. Buy from Merlin Express and not only do you get almost £50 off (£354 instead of £399), you also get the opportunity to buy one of five special £25 'Sorceror' packs.

Best of the lot is undoubtedly one which contains the drawing and graphics packages *HyperPaint* and *HyperDraw*, veteran yet still-worth-playing *Borodino*, a £50 Mindscape's discount voucher and ST BASIC with a 240 page manual.

Interested? Discuss the subject with Merlin Express on 0602 424444.

PC? DO THEY MEAN US?

Forgive me, dear ST owner, for mentioning the letters P and C in this column. It's not something I do lightly. But it does have to be said: the ST's keyboard is not what it should or could be. After all, we don't all own deliciously light and fluffy sexy Mega machines, with their silky smooth keystrokes.

I tried those daft springs that require you to prise your keys off and then replace them with the springs inside, but to be honest it didn't seem to make much difference, and besides two of the bloody things are still under my desk here somewhere – I'd use them but the alligator that lives in all the rubbish under there won't give them back.

Now, apparently, there's another solution that may sound daft but in fact could well be the way forward. It's an interface that plugs into your ST MIDI socket at one end and an IBM PC or compatible keyboard at the other. The thing comes complete with an ACC desk accessory and PRG program, so you can either boot up or load up with the appropriate software.

So if you know someone who has a spare IBM PC keyboard he or she is not using (and theat device is usually heaps better than the ST's own monster), give Diverse Data Products a ring in the States on 0101 305-651 2393. The device, by the way, costs $60: translate that directly into pounds sterling and you won't be far wrong.

The only other alternative, daft and unlikely as it sounds, is for Atari to give this wonderful machine the keyboard it deserves. The one on the TT should do fine – or, failing that, the Mega's.

SHOWING OUT

By the way, I'll see you at the All Formats Computer Fair on April 28 and 29. For details of the Fair, which is to held at the New Horticultural Halls, call 0926 640137. This particular gathering should be good for a bargain or 10!

Steve Carey

PLAYING TIP

Ghouls 'n' Ghosts

Enter the programmers name, Stephen Broadhurst, when the game begins and the words 'CHEAT MODE ON' appear. You now have infinite lives.

ST GAME of the WEEK

IVANHOE

OCEAN • £19.99

We've seen a whole host of horizontally-scrolling action games from *Ghouls 'n' Ghosts* to *Strider* and *Rick Dangerous*. Now Ocean is cashing in on this winning game style with *Ivanhoe*.

The objective is to march your character through seven levels of fiendish characters, all desperate to claim a sample of your blood.

Each of the levels is arranged in a similar fashion: you defeat a long line of animated enemies who come at you with swords, fists and clubs in order that you earn the right to confront an end of level bad guy who's the toughest of the lot.

Knock this last hombre flat and you pick up hundreds of bonus points and then advance into the next level. During the action you also encounter the occasional stream of rolling rocks which you must avoid.

As the levels proceed, so the enemies appear more regualrly and become increasingly more difficult to defeat. But don't worry too much because you can pick up extra weaponry to use against them. When the game begins you have your sword and shield to defend yourself, but fireballs and other types of ammunition become available later.

Each level has a specific theme so that in the forest you do combat against magicians and malicious thugs, then you move onto the ship where your enemies become unrelenting pirates. In later levels you join up with your trusty horse and here the levels scroll at an even faster rate.

Although you don't have any enemies to defeat, you do have to leap over boulders and bushes which are blocking your path. Considering the speed of the scrolling, let me tell you, this is no small feat.

Between each of these, there is a bonus level where you can defeat a gigantic monster to collect thousands of points. If you don't succeed in destroying him then don't worry, you can't lose any of your four lives.

***Ivanhoe* excels in graphics. The sprites are some of the largest we've seen on the ST and they are all styled in a peculiarly French manner. This latter fact is hardly surprising when you learn that they have been designed by the animator who worked on the Asterix movie.**

The action takes place against some brilliantly-defined backdrops which scroll very smooth and incredibly fast. This is certainly one of the best beat-'em-ups to date; it will positively rivet you to your seat. I guarantee!

Mark Higham

ROUND THE TWIST

If your main love in life is poking numbers into the cells of spreadsheets, you will no doubt be keen to hear of *Vertigo*. This handy little number takes your handy little numbers and prints them sideways on the paper.

If you have a wide spreadsheet, or any other wide document for that matter, you can now print it down the length of continuous paper. *Vertigo* can do this on dot-matrix, inkjet or laser printers, but with inkjets or lasers you'll have to print on single sheets and stick them together, so there's less advantage.

The program works as a pop-up, to be called from within almost any application. It supports the full IBM character set and normal, double-strike and reverse characters. You can also configure the size of paper margins, so you could presumably print concertina-style figures for your organiser, if that is what you want.

In most cases, I'd finish a short mention like this with price and supplier details, but this time, I have to admit, I know neither. The product was supplied to me by *PC Plus*, none of the staff of which can remember who sent it to them. So, if you're the sole agent for *Vertigo* in the UK, or know it was you who sent a copy in, drop me a line and you'll get a second mention for the product in a forthcoming *Express*.

LAWS UNTO THEMSELVES

A couple more quirky rules have risen out of the heaving mass to appear in John Broad's latest missive:

• Westheimer's Rule – to estimate the time it takes to do a task, estimate the time you think it should take, multiply by two and change the unit of measure to the next highest unit.

Thus, we allocate two days for a one hour task.

• Sattinger's Law – it works better if you plug it in.

and one from me:

• Notley's Rule of Perseverance – if at first you don't succeed, give up.

That's the only honest way to approach a problem.

MYSTERIOUS MESSAGES

Over the last couple of weeks I've been noticing peculiar aberrations in the screen output of my word processor. I tend to switch on the PC first thing in the morning and leave it on till well into the evening. Much of that time is spent with *TopCopy Plus* on the screen, and returning from lunch or a long phone call there have been little ditties like uuuuuuuuuuuuuuuuusdsssssssddddddddddd left on the screen. This morning I came back to find 0-9uyt at the end of a paragraph.

Convinced I was receiving the first true communication from a little-known alien intelligence, I left the machine for a quick one, down at *The Hunter's Lodge*.

An hour later and a sight happier, I returned to find a piebald cat of my acquaintance asleep on the warm top of my monitor. The only way there is up across the keyboard of the PC!

SHAREWARE UPDATE

There's a continuous flow of shareware coming into the country and most of it seems to pass through the hands of Steve Lee at Shareware Marketing.

His latest catalogue update details a lot of goodies, including several new disks of clip-art, a lot of religious material including an 'on-line Bible', a C to Pascal convertor and pre-drawn AutoCAD nuts and bolts.

There are also the latest versions of 4DOS, *PKZip*, the *Galaxy* word processor and a brand new disk of virus killers. All in all it is not stretching it to say that this makes a worthy supplement to version 5 of the Shareware Marketing catalogue.

Good though this stuff certainly is, I still doubt Steve's slogan: 'One day all software will be sold this way'. Most watches are built like Seiko's but there's still too much money to be made by conventional techniques for shareware to take over from the 'giyus ya money, willya bub' method.

You can, however, support the cause with a call to Shareware Marketing on 0297 24088.

Simon Williams

HARPOON

PC GAME of the WEEK

PSS • £34.99

One hopes, as the USSR's western border dissolves and former communists embrace capitalism, that a new era of history has begun and we will soon look back at the cold war with the same sort of perspective as that which we now use for World War II. Certainly events have overtaken the stream of novels, films and computer games that cast the USSR as the Evil Empire.

Harpoon is a prime example of the genre – a hugely complex simulation of the Third World War seen through the eyes of the commander of NATO's North Atlantic Task Force. Authenticity is guaranteed by the considerable input from Larry Bond, designer of the original board game, and Tom Clancy, author of *The Hunt for Red October*.

This is a big program, not really playable on anything less than a fast 286 machine with hard disk drive. The EGA display provides a highly-respectable 16-colour graphic interface at 640 by 350 pixel resolution – so much like Microsoft's Windows one wonders why they didn't go for the real thing. It caters for CGA and Tandy displays, too.

As commander you are in control of the whole range of hardware available to the task force, from submarines to jet fighters – over 100 varieties, in fact, each lovingly described on screen with full colour pictures. Just as in real life, the commander looks after overall strategy rather than fiddly details. I was somewhat surprised, therefore, when informed that a couple of look-out helicopters had crashed through lack of fuel.

Nevertheless *Harpoon* is not so much a game as a study in modern naval warfare. It is extremely well researched and supported by in-depth discussions of Soviet and NATO philosophy.

Ultimately, however, *Harpoon* is not realistic as it claims to be, as it ignores the inevitable nuclear holocaust that such a conflict would bring. For the serious war gamer, but I prefer *688 Attack Sub*.

Matt Nicholson

RUNS LIKE CLOCKWORK

It's not often I get a good proportion of a company's output through the post in a single day, but Clockwork Software dropped me most of its current catalogue for evaluation and, like the resident text editor, *Simon*, it all looks impressive.

Clockwork believes in the principle of 'try before you buy' and offers demo versions of all its products at £2 a go – cheaper than most shareware.

It has a line-in copy protection technique that is annoying enough to encourage you to buy the real things, while not restricting use of the programs significantly.

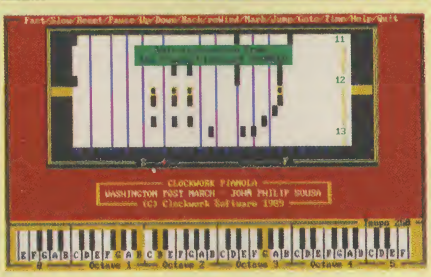
This protection includes a 'clockwork salesman', who reminds you politely in a series of pop-up windows that you haven't yet bought the full version of the program, and a 'parking ticket' which obscures part of every screen in the program.

Those programs which produce other programs as their output build in 'time-outs' so that the spawned programs only work for a few days.

So what about the programs themselves? In addition to *Simon*, covered before in this column, there are *Pianola*, *The Clockwork Memory Map*, *ShowMe* and *FastCopy*.

***Pianola* (£10) plays up to four separate music parts at once on a boggo-standard PC, while displaying a scrolling pianola roll and piano keyboard. It comes with 50 rolls of music.**

***The Clockwork Memory Map* (£25) shows the contents of memory in six different ways, including interrupt vectors, text and hex breakdowns and a code dis-assembly with instructions.**



• Clockwork's word processor is equipped with a myriad of type styles, while Pianola *makes music-making easy.*

***ShowMe* (£10) is a bit like *Xtree*, except that it shows up to 500 bytes of each of the files displayed in the directory tree and can show the complete file in text or hex format.**

***FastCopy* (£5) is a single-pass disk copier which makes copies of files or disks in a quarter of the time it takes DOS.**

Perhaps the most interesting of the Clockwork programs is the trio of utilities *SupaSnap*, *Xtra* and *BATtoCOM*.

***SupaSnap* (£25) is a text screen grabber which can take all or part of any text screen, compress it to as little as 10 per cent of its original size and save it to disk. Several screens can be combined into a single file and re-displayed using the decompressor.**

***Xtra* (£20) is an extension to DOS's batch file language, with a dozen addition functions intended to help draw pretty screens and animate them with highlighted menus and enlarged character sets.**

An extended version of this program, *SuperDOS* (£50) adds more functions.

***BATtoCOM* (probably around £65) is not complete yet, but will take any batch file and compile it into an equivalent COM file. It will handle standard DOS commands and those in *Xtra*. It can also call *SupaSnap* screens. With these utilities you can produce simple font-ends, installation programs and even complete training packages.**

Clockwork also offers a series of free goodies, like its text file viewer, *View*, with any of the other utilities. Why not get a full list and a couple of demo disks from Clockwork on 0705 483217?

At these prices – all exclusive of VAT – you can't go far wrong.

Growing with SAM

Grow your Coupé system with SAM. Here's the latest crop of goodies:

SAM Coupé 256k Computer
780k Disk Drive
256k Memory Expansion
Communications Interface (RS232 and Parallel)
External Drive Interface (with Parallel Printer Port)
MGT Disks, Advanced Technical Manual

Please send me more details and prices of the SAM Coupé, and the address of my nearest dealer.

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SPECTRUM

PD SPECCY

They might have been a long time coming, but now Spectrum public domain libraries seem to be appearing all over the place.

The latest good news, for anyone who thinks the PD ethos of free software you can copy and distribute without fear of incarceration, sounds like a promising one, is the formation of the Spectrum Public Domain Library. This functionally-titled outfit has just been founded by Ashley Price on a totally non-profit making principle.

Unfortunately, at the moment Ashley's library shelves are a little bare and so he's relying on you lot to submit fully-working programs into his public domain on 3-inch disk or cassette.

Contributors and fellow PD librarians should send everything to Ashley Price at 13 Vectis Road, Tooting, London SW17 9RF.

The same enterprising fellow also runs a CV printing service. A nicely turned out CV costs £2 and an update just £1. Send the relevant details to the above address and then get yourself prepared for employment.

QUEST FOR CARTRIDGES

James Taylor of Manchester has bravely written to me to confess that he recently bought a Microdrive for his Spectrum. Younger readers won't know that these were Sir Clive's long-awaited and, supposedly, revolutionary fast access storage system. Unfortunately, they didn't work very well.

Anyway, James is finding it increasingly difficult to find any cartridges to feed his Microdrive with and wants to know if anyone out there can suggest a possible supplier of said rare artifacts.

If you know of someone still selling the things, be a sport and help a fellow Speccy owner by sending all that you know to me at the Spectrum Column, *New Computer Express*, 30 Monmouth Street, Bath BA1 2AP.

MYSTERY POKE

The mysterious Miktor continues to take over the column with the fruits of his poking exploits. Here are his latest hacking conquests which you can make use of by:

1) Typing the listing required into your Speccy, leaving out any lines which give undesired cheating benefits.
2) Saving for future reference.
3) Typing RUN and
4) Inserting the original game tape in your tape player and pressing play.

Then it really is just a matter of sitting back and wondering with amazement at the colossal intelligence of this Miktor person. Is this a good deal, or what, heh?

```
10 REM THE BOUNTY HUNTER
20 LOAD "" CODE :
     POKE 24626,62 : POKE 24627,96
30 FOR N=24638 TO 1E9:
     READ A: IF A>256 THEN GO TO 50
40 POKE N,A: NEXT N
50 RANDOMIZE USG 24576
60 DATA 175,50,203,170: REM LIVES
70 DATA 175,50,190,155: REM AMMO
80 DATA 175,50,174,170: REM KEEP UPGRADES
90 DATA 195,244,152,999:
     REM END MARKER DON'T REMOVE

10 REM FRUIT MACHINE SIM II -
     1 TOKEN = 99 CREDITS
20 CLEAR 5E4: FOR N=23440
     TO 23471: READ A: POKE N,A: NEXT N
30 RANDOMIZE USR 23440
40 DATA 221,33,64,254,175,55,17,46,
     0,61,205,86,5,48,241,33,168
50 DATA 91,34,93,254,195,64,254,
     33,15,190,54,99,195,58,244
```

Multiface users need only insert the following for similar effects: 48655,99

```
10 REM SPACE RIDER JET PACK CO
51 POKE 42545,0: REM LIVES
52 POKE 45084,0: REM IMMORTALITY
70 MERGE "": RUN
```

Robin Alway

SAM COUPE

SON OF ALL FORMATS FAIR

MGT's All Formats Computer Fair was apparently a bit of a Coupé-dominated event, so it might be well worth your while to haul yourself and your wallet down to the event's sequel which takes place on Saturday April 28 and Sunday April 29 at the Royal Horticultural Halls in London. For advance tickets and stand sales phone 0225 447453.

SAMZINE

I've mentioned it before but here's another plug for the first, and at time of writing only, SAM fanzine.

Turbo is a monthly publication devoted subserviently to the new computer in our lives.

The first issue was substantially thick with sections for Spectrum/Coupé compatibility, adventures, serious software, games and programming which included three short SAM BASIC listings.

For some reason, *Turbo* is only available by subscription (£5 for five issues or £10 for 11 issues), which might put a lot of people off. But it is an enthusiastically-edited mag that you should find out a bit more about. The usual SAE will get you more details from Adrian Betts, Turbo, 8 Healey, Lakeside, Tamworth, Staffs B77 2RF.

WARNING: HYPE

If you're looking for an even bigger and even more detailed supply of hot Coupé news, information and tips, from issue 53 onwards *Your Sinclair* will offer a whole page packed to the border with exclusively-delectable, Coupé-related enlightenment. What's more it is going to be brilliantly written– by me.

Robin Alway

PCW

CATCHING A CODE

As you know, BT is changing 01 numbers in London to 071 or 081 on May 6. (Some numbers can already be reached with the new codes – May 6 is only the date after which the 01 ceases to operate altogether).

Wouldn't it be nice if there was a computer program that changed the numbers you have stored on PCW disk automatically for you?

Well harvest my wheat, there is, and it only costs £1.75. Just buy the May edition of *8000 Plus* from any newsagents and you'll find it in the 'Listings' section.

INSTANT TIP

Here's how to get a fraction printed out in *LocoScript* that isn't already on the keyboard – say four fifths (a violin is of course tuned in four fifths, though this has very little bearing). Type:

```
[+] P17 [ENTER] [+] SR 4
 [-]SR / [+] SB 5 [-] SB [-] P
```

and the fraction will print out nicely. Of course you can get any other combination by substituting for the 4 and 5 as appropriate.

BURNT OFFERING

There's been a small flurry of correspondence on 'screen burnout' recently – the faint but permanent imprinting of messages left on the screen of a PCW which has been on for a long time.

Dave Jeffries of Canterbury tells me he left his PCW showing the *LocoScript* disk manager on by accident while he went away on holiday – for nearly three weeks! Fortunately, the good news is that it seems to be unaffected.

MUSICAL CHEERS

April 26th sees the launch of *Classic CD*, a classical music magazine with a free CD with each issue containing highlights of the month's best releases.

I mention this because I'm now working on this magazine, and it strikes me that maybe half of our dozens of reviewers use PCWs, sending their copy in on *LocoScript* disks.

I've got a plea to anyone who submits copy to magazines or newspapers in this way: please, please read your manual and find out how to make ASCII files. It's a real fag having to convert every file you get sent from *LocoScript 1* or 2 to ASCII, which is the form invariably required by publishers!

Rob Ainsley

INSTANT TIP 2

And for CP/M users here's how to use PIP to copy all but a few files. Say you want to copy `CHAPTER.1` to `CHAPTER.6` from A to B, but not `CHAPTER.3` or `CHAPTER.4`. Instead of copying the files you want, type the command

```
PIP B:=A:CHAPTER.*[c]
```

and PIP will list the files one by one. Press y after to confirm you want it copied, or n to say you don't want it copied. Easy as apple pie on the lawn with the Vicar after Sunday service.

MSX

UNSCRAMBLE!

It seems ages since I reviewed a full-priced MSX game, particularly for the MSX 1 computer. So, to redress the balance a little, here are my impressions of Grandslam's latest MSX game *Scramble Spirits*, which is a convertible scrolling shoot-'em-up.

As I have already mentioned, this is a full-priced game, and sells at £9.99; therefore it has had to be well written, as some of the budget games that are in direct competition, like *Silent Shadow*, are very good shoot-'em-ups, offering excellent value for money.

The one thing you can expect when GrandSlam produces a game for the MSX is that it will be a very close copy of the Spectrum version. *Scramble Spirits* is no exception. The game also offers a high level of playability.

Now regular readers of this column will know that I love shoot-'em-ups, in fact there is nothing I enjoy more than watching the destruction of endless sprite formations on my monitor.

Unfortunately, being an MSX 2 owner means that I am not exactly short of very good shoot-'em-up-type games. Even the humble MSX1 computer has games of this ilk that are almost state-of-the-art for 8-bit computers.

Indeed, it seems a little unfair to compare *Scramble Spirits* with games such as *Salamander* and *R-Type*, so I will compare it with similarly-priced games such as *Xenon* by Melbourne House.

Firstly, *Scramble Spirits* has very good sound effects and music, plus a well drawn loading screen. Some of the sprites, however, are hard to distinguish against the background. This is where the game seems much like *Xenon* and, in fact, these two games have a similar feel to them.

Of the two, I think I prefer *Xenon* although *Scramble Spirits* has features that I like, such as the drones that you can obtain, thus increasing your fire power. Also, like *Xenon*, at the end of each level a guardian has to be destroyed, but in *Spirits* I found this section too easily accomplished.

For a full-priced game *Scramble Spirits* isn't bad and is fair value for money. I would score it about 6 out of 10 – a higher mark would have been appropriate if it had been a little less expensive. For those who are short of cash at the moment (aren't we all) try *Silent Shadow* or *Star Dust*, only £2.99 on the Kixx label.

CENTRALIZE!

MSX Central, of Coventry, has been in touch to inform me that an MSX computer show is being planned and will hopefully take place in Coventry on November 11 of this year.

This show is to be a joint venture between MSX Central and Vernon Wyland's MSX Viewdata PD Club. If you wish to know more about this show or wish to book a stand at the venue, contact MSX Central at 14, the Warden's Avenue, Coventry CV5 9GJ.

PROMISES, PROMISES

More games are due out shortly on the good old MSX format. I will provide details next week – so stop salivating.

Keith Neal

CPC

GOAL-DEN OPPORTUNITY

The battle has begun for the CPC soccer world cup. Virgin is the first into the fray with *World Cup Soccer: Italia '90* (see review on page 50), to be closely followed by US Gold's *Italy '90* and Empire's *World Cup Compilation*.

Virgin has the rights to the official World Cup title and usage of the FIFA logo for the event (you know – the one that looks just a little like an anorexic Bertie Basset).

In the past most footie sims have been either overhead views (*à la Kick Off*) or from the side (like *Matchday*). Virgin, however, has opted for a rather novel, top-row-of-the-stands-behind-the-goal view. This lets you see the players, giving a greater sense of realism and yet is high enough to allow you to judge distance, for those incidental elements of the game – passing and tackling.

Most interesting though is the special close-ups you get whenever one of your players accidentally strays into the opposition's 18-yard box (with England it generally appears accidental anyway). At this point you zoom in behind the striker with the goalie in the background. You've then got a limited amount of time to bob and weave, duck and dive from side to side trying to fool the keeper and put one past him.

Adapted from a coin-'op, the action is direct and easily picked up. There's none of this mucking about with teams and the like, just straight footie skill. And that's very easy to develop as the graphics (which have translated brilliantly to the CPC) are crisp enough to tackle and shoot at precisely the right moment. It's smart little sprites who run like Waddle, tackle like Butcher and keep goal like Shilton – well, after all, no team is perfect!

US Gold's *Italy '90* is the other announced contender for the cup and it looks like being a great match. This game (still in the preview stage) boasts another bunch of features to excite and delight CPC desktop Gary Linekers.

Most intriguing of these is the ground-level view of corners, giving you a John Barnes perspective on the action when the ball goes into touch.

The other team already announced for the finals is Empire who has bought together three of the CPC's top players in one World Cup Compilation.

Gary Lineker's Hot Shot brings graphic colour and speed, *Tracksuit Manager* gives the brain a testing time on the bench while the squad is led onto the field by *Kick Off*.

KO, which looked decidedly-dodgy as far as the graphics, scores with playability. All of these may not be new games, in fact, but they're known names and should be in with a shout.

• **Italia '90:** ***World Cup winner?***

GIVE 'EM STICK

It's not only the software houses that are getting carried away with World Cup fever. Hardware manufacturers have caught the bug, too.

Joystick maker Dynamics has repackaged, re-badged and re-vamped its ever-popular Competition Pro joysticks ready for football's greatest competition. The new range is called Competition Pro Goal. Design is as the 'standard' Competition Pro, so if you were comfortable with that model then you should like this as well.

The various components that make up the device are made from different coloured plastics. These have been combined so that the sticks come in a range of team colours, giving them true international appeal.

There are initially 10 different designs, covering the top international teams (Wales is not included). However, Dynamics says that it can manufacture them for any country – as long as there's enough demand.

Now I'm not a great football freak myself, but the multi-colour schemes do look rather spiffing. As well as selling in droves to soccer fans, I'm sure that people who just want a pretty stick will find it appealing, too.

Talking of joysticks, I came across a rather interesting concept recently. This time it hails from Sonmax.

Again, it's based on an existing design – the sureshot standard. The novelty is that the joystick comes in bits – you have to put it together yourself!

Yes indeed, it is a true DIY joystick for those of you who are handy, but luckily the assembly instructions are a good sight clearer than those that accompany MFI furniture.

All that the simple construction effort requires is a screwdriver. No nasty technical things like soldering irons are involved.

Presumably, Sonmax is saving a fortune on the manufacturing costs, as the company is able to offer the joystick at a knock down price.

BACK TO SCHOOL

The release of *Fun School 2* last year caused minor earthquakes in the software industry. The educational program rocketed into the charts, where games usually rule supreme.

Since then it has gone on to sell more than 130,000 units, a staggering amount for any program.

Now Database has decided to follow-up its extraordinary success with, the cunningly-titled, *Fun School 3*.

It is in the early stages at the moment, but judging by the pre-production version, the sequel is going to be a great improvement on the original.

There will be three packages available, with programs aimed at slightly different age ranges to fit in with the new National Curriculum: Under five, five to seven, and over seven.

As usual, the company is releasing it on every format under the sun. Thus you would not be too far out if you were to expect the CPC version towards the end of May.

Trenton Webb and Adam Waring

BBC

TUMBLING DOWN

Easter arrived early this year for all lovers of Acorn micros, as prices were slashed across the range.

In fact the cuts were of modest, rather than epic proportions, but nonetheless welcome.

Prospective purchasers of the 4Mb RAM 440 will be happiest as the price comes down by a whapping £300 to £2,099. Even us humbler BBC users will be pleased, as the Master 128 plummeted to £399 from £439.

Looking beyond the flannel of Acorn's press release on the subject, there are two schools of thought as to why the price cuts have been made.

First, Acorn is attempting to clear stock before the launch of new machines, probably based on the ARM3 chip. This is a very distinct possibility.

Second, the global drop in RAM prices has allowed Acorn to pass on reduced costs, thus making its product line more competitive.

Both notions have some merit, but neither cover the whole story completely. For example, why reduce the price of the Master at all, as it neither uses much RAM, nor is it likely to be replaced in the near future? Expect some announcements from Acorn to clarify this matter.

SOFT NOTES

A common complaint to me is that there is no longer any decent software available in the BBC market.

By this, as far as I can make out, the complainants mean decent utility packages, applications, and special interest software, rather than games.

I must disagree, in fact there is plenty – the problem is in finding it. Most small software-producers for the BBC micro can no longer afford exorbitant advertising rates, and therefore must rely on word of mouth, bulletin boards and small ads for their custom.

If you're into music, for example, you should be interested in the *Panda* range of disks now numbering 13, after only six months of production.

The lucky 13 contain the complete *Rendezvous* suite as performed by a certain mega-superstar J M Jarre, if you like supermarket-type muzak. Panda Discs can be contacted at: Four Seasons, Tinkers Lane, Brewood, Staffordshire ST19 9DE.

ONTO POETICS

Poetry is not actually a subject associated with disk magazines, but there is one, and very strange it is too. Called *Agog ago go* (yes, really) it was actually sent to me as a bribe for the ISO Pascal set. But no dice.

Actual winner of aforesaid ISO Pascal is Mark Beevers, who also supplies this week's tip: 'Why not keep the specially-shaped tube which your EPROMs come in, just in case you need to take them out again.'

This is an excellent idea, and what's more they make about the only known defence known against Postman Pat if you ever need to send them anywhere through the post.

Mark is going to university to study software engineering, so Pascal will stand him in good stead.

Andrew Brown

YOUR FORMAT

Amiga 8
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C64

BARGAIN TIME

In spring a young man's thoughts turn lightly to computer shows at Olympia in London. From the May 4 to 6 this year, Olympia is transformed into a place for picking up computer-related bargains. It will cost you £5 to get in on the day.

To give this bash its full name, it is called The Spring Computer Show and is sponsored by another weekly computer magazine. What is important, however, is that there will be a delectable assortment of goods on offer, while representatives of many of our favourite companies will be on hand to answer questions and to talk computers.

POKE ON

Remember me referring to *Attack of the Mutant Camels* a few aeons ago? Well, another little cheat has surface for this one, and all you have to do is `POKE 7019,0:SYS 4096` to have an interesting effect on the camels.

On to some others. If you've got the Parker Brothers cartridge version of *Star Wars* you might like to try typing in the name of the company for an interesting response.

I've never been a fan of fruit machine simulations, but to get an extra tenner every go on *Vegas Jackpot* try `POKE 20114,173`.

Finally for this month, if you want to be safe from baddies and flying swords in *Ice Palace*, you must `POKE 12755,173:POKE 13416,173`. Pokes without a SYS call are for cartridge owners only, and those with a SYS are for anyone who can reset a game – to clear up one or two queries that I've had.

HAPPY BIRTHDAY

The fanzine *Spellbreaker!*, an invaluable aid for all adventure players, is teeming with maps, solutions, hints and tips every month, and it is a year old.

Congratulations to the editor, Mike Brailsford. If anyone wants a copy then write to Mike at 19 Napier Place, South Parks, Glenrothes, Fife KY6 1DX. Copies are £1.50 each, by the way, and the latest issue had 40 pages in it.

As well as the above information, the magazine also offers a most useful service. For 30 pence plus an SAE you can get a solution to any one of hundreds of adventures, all of which are listed in the back of the fanzine.

A BOOK AT DAYTIME

New books for the Commodore 64 are not seen all that often, good ones even less often, so if any of you fancy an interesting read then I can recommend *Artificial Intelligence Projects for the Commodore 64*, written by a certain Timothy O'Malley.

Published by TAB Books Incorporated, which tells you that it's American and might, therefore, be a little tricky to track down, the book is basically a collection of AI projects complete with listings that actually work. All examples are explained in a straightforward and interesting manner.

Pete Gerrard

QL

LIBERATION!

Liberation Software recently sent me the latest version (3.3) of its Q Liberator SuperBASIC compiler. The software comes on a 3.5-inch disk with comprehensive documentation, including a good index.

The disk was not copy-protected, and the clone program provided made the generation of a working copy a doddle. A boot program loads the compiler and some SuperBASIC extensions when the machine is reset or powered up.

The compiler operates in two phases. The first phase performs some preliminary check and creates a 'work file' on the disk.

The second phase carries out detailed checks for errors and generates an 'object' program, which may be executed. The two phases, if there is enough memory, may be executed automatically – I used this method, as I have a 640K system.

The compiler is remarkably easy to use. Assuming a working SuperBASIC program called 'fred' is in memory, begin by typing:

```
liberate flp1-fred,
```

which will first create a work file called 'fred-wkg', and then generate an executable program called 'fred-obj'. In turn, this may be executed as a QDOS job by typing the following:

```
exec flp1-fred-obj
```

in the usual way.

Programs I compiled with Q Liberator were speeded up by a factor of five to 10. They also loaded much faster.

Programs created by Q Liberator require support from a run time system. This run time system can either be held in memory while the program is executed, or linked to the program, using a compiler option.

As with the previous version, compiled procedures and functions (termed 'externals') may be called from ordinary SuperBASIC programs or compiled programs. Programs too large to fit into available memory may use 'overlays' – externals that may be loaded and unloaded as required.

I was very impressed by Q Liberator 3.3; it proved very easy to use and generated programs which, although they weren't as fast as those produced by, say, DP's Turbo compiler, should run fast enough for most users.

Good value at £55, Q Liberator is available from Liberation Software, 43 Clifton Road, Kingston upon Thames, Surrey KT2 6PJ.

FRACTAL REPORT

John de Rivaz's *Fractal Report* newsletter contains some material of interest.

A SuperBASIC program by JC Topham generates a new type of fractal image. Like all fractal programs, it runs extremely slowly, so I compiled it with Q Liberator, without any problems.

Fractal Report is available from Reeves Telecommunications Laboratories Ltd, West Towan House, Porthtowan, Cornwall TR4 8AX.

John Torofex

XE

BACK TO DATABASICS

The letters are written and the finances sorted, checked and accounted for – *AtariWriter Plus* and *Atari Finances* have done their stuff.

What about all those train numbers, beer mats, record and tape collections still to be sorted out? When was the last time you could put hand on the 1947 Guiness commemorative that you wanted to swap?

Home Filing Manager is a database that will help to bring order to your life. Anything from bottles to stamps to bulletin board numbers can be stored, sorted and retrieved within seconds.

What makes the the program so good is, unlike ordinary databases where you must spend hours setting up fields, records and datastreams, working out possible character lengths and hoping you'll never exceed them, *Home Filing Manager* appears as a series of blank cards.

There's nothing to set up and nothing to worry about changing later when you find you've run out of space. Just one card after another that can carry any information – even an index to all of the articles that have appeared in *Express* right from issue one.

Indeed, *Home Filing Manager* is perfect for students who need reference to particular tracts of text. And once the information is on disk, it can be printed to any dot-matrix or daisy-wheel printer.

The *Home Filing Manager* costs £16.95 and is available from Silica Shop (among others) on 01-580 4839.

Edmund Blake

ARCHIMEDES

MINERVA GAMES

One of the main producers of Archimedes software is Minerva Systems, and its catalogue of games seems to be increasing almost daily at the moment. Recent releases include the following, some of which I hope to review in the next few weeks.

Caverns is an arcade adventure, based – here's a surprise – in a network of caves. *Casino* covers several of the most popular gambling games and *Family Favourites* offers Pelmanism, an Othello-like board game and the *Tron* spin off, Light Cycles.

Two new arcade-type games, *Bug Hunter* and *Moon Dash*, feature a sticky-footed fly crawling over all surfaces trying for treasures and suchlike, and a moon buggy bouncing over craters on a desperate rescue mission. I leave you to work out which is which.

Battle Tank is a tank simulation with some similarities to *Conqueror*, but without the David Braben landscapes. *Talisman* is another arcade adventure and *Maddingly Hall* is a text adventure with some fancy graphics.

Prices range from £14.95 for *Talisman*, *Battle Tank* and *Maddingly Hall*, to £17.95 for *Caverns*, *Bug Hunter* and *Moon Dash*, to £19.95 for *Family Favourites*.

OF MODES AND MENUS

There has been some response to points made in recent columns – many thanks for these.

Stuart Halliday wrote in and enclosed a disk with some very handy bits and pieces. He also answered my query about the icon bar – could have found out for myself, had I tried!

If you fill the icon bar with applications, it simply scrolls left and right so you can still get at any of them.

Stuart also sent me a copy of *Translator*, a file translation utility. This program imports Degas files from the Atari ST, IFF files from the Amiga, *MacPaint* files from the Macintosh and GIF files. This program is, by the way, in the public domain.

Also included on the disk were four relocatable modules which make available further video modes. You run the module, open the mode menu from the palette icon and type in the new number – I didn't realise you could do this and I call myself a columnist. The new modes include Mode 44, a four-colour effort which only takes 48K – ideal, as Stuart says, for DTP on 1Mb Arcs.

The final point in Stuart's letter was that the parameters for the PrinterLJ driver can be saved to disk. This I did realise – my point is that the resolution default of 150dpi is daft.

SOFT ROCK ON THE ARC

Vince Hudd has started a software house called Soft Rock Software and his first product, *CAST 1*, is almost ready for release.

CAST 1 is a computerised cash book program providing 10 cash books, that provide up to 224 manual and 32 automatic entries a month. The program will cost £29.95 and Vince is just finishing off the documentation. The complete package should be available within a month and I'll let you know what I think when I see it.

If you want to contact Vince, he's available in the evenings: 0272 503639.

SIMTRON UPDATE

Simon of Simtron, the company behind *Archway*, rang me the other day to let me know current progress on the new version of the product. A new release was due earlier this year, but Simon has decided to add extra features to the package and move the release date to a couple of months hence.

The new features sound exciting, with the concept of 'editors' being added to the software. The idea, as I understand it, is that there will be three types of editor available in the new package, which in themselves may well form the basis of new applications. An editor, in *Archway* terms, will be a program which opens files and imports data, manipulates that data and saves the result. That description covers a multitude of different products.

Two of the editors likely for the new edition will be similar in principle to those in !Edit and !Paint, but the third type is probably the most interesting, as it will be similar to the *HyperCard* system on the Mac. That product has already prompted several third-party HyperCard 'stacks'. Work on the new *Archway* is well advanced.

Bertrum Carrot

QUALITY SUPPORT SERVICE

Technology Centre

DOT MATRIX PRINTERS

9 PIN 80 COLUMN		CPS	£
STAR	LC-10	144/36	125
STAR	LC-10 colour	144/36	166
STAR	LC-10 colour comm 64	144/36	166
CITIZEN	120D PLUS	120/25	108
CITIZEN	120D PLUS comm 64	120/25	108
CITIZEN	PRODOT 9	300/60	270
PANASONIC	KXP 1081	144/28	122
PANASONIC	KXP 1180	192/36	139
MAN. TALLY	MT 81	130/26	107
OLIVETTI	DM 100SPR	200/30	119*
OLIVETTI	DM 105SPR colour	200/30	159*
EPSON	LX 400	180/30	135
HYUNDAI	HDP 910	180/34	134
9 PIN 136 COLUMN			
STAR	LC-15	180/45	255
CITIZEN	PRODOT 9 x	300/60	345
PANASONIC	KXP 1592	216/45	255
HYUNDAI	HDP 920	180/34	214
24 PIN 80 COLUMN			
STAR	LC24-10	170/57	195
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COMPUTERS

AMSTRAD (includes monitor)

	MONO £	COLOUR £	EGA £
PC 1640 SD	511	607	704
PC 1640 DD	581	677	773
PC 1640 HD30	773	869	966

COMMODORE STARTER PACK (includes monitor)

ALL MODELS INCLUDE ONE YEAR ON-SITE MAINTENANCE

8088; 4.77/7.16/9.54mhz; 640K ram; 3 slots; serial/parallel ports; clock; 1 or 2 360K drives; MS DOS 4.01; GW basic and manuals.

		MONO £	CGA £	VGA MONO £	VGA COLOUR £
PC 10	SD	494	629	649	736
PC 10	DD	551	690	707	795
PC 20	HD20	675	799	846	929

(As PC 10 SD but includes hard disk drive)

80286; 6/8/12mhz; 1mb ram; 3 slots; serial/parallel ports; clock; 1x 1.44mb drive; MS DOS 4.01; GW basic and manuals.

		MONO £	VGA MONO £	VGA COLOUR £
PC 30	HD20	967	967	1128

SAMSUNG (monitor not included)

ALL MODELS INCLUDE ONE YEAR ON-SITE MAINTENANCE

8088; 4.77/10mhz; 640K ram; 6 slots; serial/parallel ports; clock; 1x 1.2mb drive; MS DOS 3.3; GW basic and manuals.

	MONO/COLOUR £	VGA £
SPC 3000/1 SD	410	519
SPC 3000/2 DD	473	581
SPC 3000/3 HD20	676	784

80286; 8/12mhz; 1mb ram (exp. to 5mb); 5 slots; serial/parallel ports; clock; 1x 1.2mb & 1x 1.44mb drives; MS DOS 3.3; GW basic and manuals.

	VGA £
SPC 6512/1 DD	1029
SPC 6512/2 DD HD20	1306

HYUNDAI (monitor not included)

8088; 4.77/10mhz; 640K ram; 5 slots; enhanced keyboard. Includes: serial/parallel ports; clock; 1 or 2 360K drives; MS DOS 3.3; GW basic and manuals.

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	VGA £
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MONO	SAMSUNG	MA 2671/3/5 FST	12"	81
MONO	AKHTER	MONO 14 FST	14"	79
MONO VGA	PHILIPS	BM 7749 FST	12" p/w	107
MONO VGA	AKHTER	VGA 14M FST	12" p/w	99
MONO VGA	SAMSUNG	ML 2611	12" p/w	81
MONO VGA	SAMSUNG	ML 4571	14" p/w	95
MONO A4	SAMSUNG	MP 5671(inc. card & drivers)		634
CGA	PHILIPS	CM 8833	14"	209
EGA	PHILIPS	CM 9073	14"	289
EGA	SAMSUNG	CM 4551	14"	281
VGA	HYUNDAI	HDM 401 FST	14"	253
VGA	PHILIPS	3CM 9809	14"	372
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FROM The ARCHIVE

ONE YEAR AGO

Intel announced the monster 80486 processor, the great, great, grandson of the humble chip that IBM put in the original PC. The 486 contained a fast chip, maths processor, memory management and cache. Described as 50 times as powerful as the original PCs, it was suggested that by 1992, over 10 per cent of PCs would be 486 based. We're well into 1990 and that's a long way off, but there's time.

A pocket-sized CD-ROM PC called Dynabook was launched by Attica Cybernetics. It was described as an encyclopaedia in the pocket, but at nearly four thousand pounds was beyond most pockets.

The Soviets picked ICL for a giant venture to set up and open a PC factory in Leningrad, making ICL the first Western manufacturer to run a production line in the Soviet Union. The contract included the shipping of IBM-compatible PCs for assembly by Soviet workers. IBM was a little upset to be pipped at the post for that one.

The staff of *New Computer Express* thrashed MicroProse 13-3 in a friendly soccer match.

Just for a change, Commodore was taking a different line from Atari and casting envious glances at the Apple share of the high-end DTP market. It was expected that Commodore would take on board one of the industry-standard packages such as *Professional Page* or *Pagesetter*
Two years on, Commodore are still ahead of Atari and still behind Apple.

Straining at the leash were two Macintosh emulation products. The Spectre 128 from HiSoft was turning STs into Macs with a bit of tweaking ,and the A-Max for the Amiga was just around the corner. Both have been with us for some time and although they work, there hasn't been a huge rush to the cheaper machines and Apple seems to be holding up its corner.

TWO YEARS AGO

Rags turned to riches as 22-year-old Andy Richards bought the software shop that he had started in as a trainee five years before. Rapid expansion at Bits and Pieces caused financial difficulties and owner Barry James had to put it up for sale. Andy bought out the four partners for about $3,000 each and aimed to put the business back on its feet inside six months.

Multi-lingual word processor package *LocoScript* was released in a foreign language closer to home as the Welsh version came out. Although not expected to sell in droves, Locomotive Software was quietly confident that it would find a comfortable niche.

The Psion Organiser, not known for its brilliant graphic display, received its first game. *Hangman* was labeled 'educational' and marketed by Global Software for £29.95. The trend didn't catch on and one of the few remaining leisure packages for the Psion is *Form Master*, the horse race forecasting program

Driller, the 3D 'feels like you're there' game for the eight bits, leaped the great divide and appeared on the IBM PC. The faster processor speed made the game quick enough to add a little tension.

The bulletin board Compunet announced its first multi-user space trading game, *Federation 2*. Claimed to be different from all the other multi-user games, it soon spawned a rake of clones, some serious, some rubbish.

FIVE YEARS AGO.

Scotland Yard detectives joined forces with South Yorkshire CID to make the first hacking arrests in the UK. Steve Gold and Robert Schifreen were alleged to have used computers to interfere with other computers. They were found guilty.

Channel 4's digital TV presenter, Max Headroom, made his debut as link man between rock and pop videos.

The Salvation Army bought 90 Alpha Microsystems to handle welfare records, appeals, and other data-intensive tasks.

TEN YEARS AGO

Lord Gowrie, then Employment Minister, predicted that robots and micros would take over the mines by the next century. He scoffed at the idea that technology could lead to five million unemployed.

Now then. The London Metropolitan Police force spent £40m on a new computer system to relay messages to cars for emergency calls. The equipment had no capacity for retaining any form of records.

Sources: *New Computer Express, Computer Trade Weekly, MicroScope, Computer Talk.*

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THE SHOPPING EXPRESS GUIDE TO THE TOP WORD PROCESSORS

The most vital piece of computer software for most serious users is the word processor – many use their micro for nothing else. Here is the Express verdict on the best you can find for every machine

The most popular use for the micro is as a word processor. Its uses are many and everyone can benefit from it at one time or another.

Whether you intend to write to the *Times* as 'Angry of Pinner', write to thank Aunt Elspeth for the vellum bound copy of *Pilgrim's Progress* or send Jeffrey Archer running for the smelling salts with your latest thriller, a word processor is for you.

First things first, what is a word processor? It is an applications program that runs on your micro allowing you to use it as an intelligent typewriter. You can see the results of your typing before you print it and can correct mistakes, manipulate text and format documents on screen.

There's no need to print your document there and then, as it can be saved to cassette or disk and retrieved later for further additions, editing or printing.

The beauty of word processing is that you can set up and save commonly used layouts and letters and load them when needed to avoid repetitive typing.

Most word processors allow you to change margins and reformat text and any number of tab settings can be incorporated.

Common series of commands or keystrokes can be incorporated in macros in most word processors, allowing multiple commands at a single keypress. This is also useful for saving strings of text. Commonly used phrases, addresses and phone numbers can be assigned to a macro.

The more comprehensive (for which read 'more expensive') word processors generally have spelling checkers, mail merge facilities, word counters, and some of the better ones can even display italics, bold type face and different text sizes on the screen.

The ability to present the document on screen as it will appear on paper is known as WYSIWYG (What You See Is What You Get) and this feature is becoming 'standard' on new software.

To combine a letter with names and addresses in a database is called mail-merge and is especially useful to businesses who wish to send the same letter to different clients, or perhaps a student wanting to tailor a curriculum vitae to suit prospective employers.

Page numbering and titling can be handled by most programs, and some even allow footnotes, bibliographies and indexing to be incorporated.

As word processing becomes more advanced, features such as importing graphics, working on several documents at once and calling lists from databases increase the efficiency of a simple typist or a large multinational. We all need to write at some time, and the word-processor takes some of the drudgery out of the task.

This is the Express guide to the word processors available for each machine with a brief description of each. Prices shown include VAT.

PC WORD PROCESSORS

● KWORD 2
Kuma
£39.95

Budget-priced word processor with on-screen features such as bold and italic. Runs within GEM and can have up to four documents open in on-screen windows simultaneously.
0734 844335

● MANUSCRIPT 2.01
Lotus
£454.25

The heavyweight for the technical author. Not a general purpose WP. In a sense, it is more of a giant outline processor for imposing clear and flexible structures on complex documents. Handles cross-referencing, equation definition and tables. Imports Freelance and Graphwriter graphics and allows page previewing. Requires hard disk.
0753 32443

● MULTIMATE ADVANTAGE 2
Ashton Tate
£450

Primarily a secretarial package. Included are sophisticated mail merge functions, a card index database, a thesaurus and a 110,000- word spelling checker. Macros and line drawing possible. Choice of keyboard or menu control. Hard disk recommended.
0628 33123

● MULTIWRITER 2
Newstar
£114.95

Regarded as a relatively modestly priced WordStar clone, Multiwriter 2 offers macro learning and language facilities and can import WordStar, WordPerfect and Multimate files. Has mail merge, word counter and spelling checker.
0245 265017

● NEW WORD 2.18
Newstar
£114.95

Highly customisable and well respected WordStar-style WP with powerful mail merge, plus spelling checker and word counter. Uses the same keystrokes that WordStar enthusiasts know and love.
0245 265017

● OLITEXT PLUS 2.0
Olivetti
£355

A fast word processor with math and macro functions. Contains a pull-down notepad and calculator. WYSIWYG.
01-785 6666

● CELEBRITY
Software Paradise
£80.50

An unusually well implemented word processor for the beginner. Uncompromising attempt at a comprehensive suite of programs with a thesaurus, spell checker and the ability to open four text windows.
0222 887521

● PC WRITE 3.0
Sagesoft
£114.95

Footnotes, contents, mailmerge, multi-column, and other features make this under a hundred good value. Runs a little slow at times but is a good middle of the road program.
091 213155

● PROTEXT
Arnor
£100

Widely respected, not least among journalists, Protext stands out for its abilities in text and file handling. Built-in mail merge facilities are so powerful that it forms programs of its own. Choice of prompted word commands or menu system. Spelling checker; editable printer drivers.
0733 68909

● SPRINT 1.01
Borland
£172.50

An unusual and innovative package. Has drawbacks, including not being WYSIWYG, but offers emulations of common WP user interfaces (including WordPerfect, WordStar and Microsoft Word) plus full programming language for writing your own. Allows up to six windows on 24 documents. Saves changes while you type!
0734 320022

● SUPERWRITER 1.03
Computer Associates
£224

A fairly simple to use well functioned word processor with mail merge and spell checking facilities.
0753 77733

● TASWORD PC 1.17
Tasman
£49.95

Dead simple and cheap enough but damn slow. A domestic solution to a commercial problem.
0532 438301

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0453 753944

● WORD 5.0

Microsoft
£395

A very good, sophisticated heavyweight word processor with excellent outliner.plus style sheets, maths, macros, and up to eight windows on the screen at any one time.
0734 500741

● WORDPERFECT 5.1

Word Perfect UK
£494.50

Not cheap, but this top-selling WP is generally regarded as superb. Lacks outlining, but among numerous attractive features are thtree-level undo facility, graphics importing and editing, macro facilities and on-screen columns.OS/2 version costs £575.
0932 850500

● WORDSTAR PROFESSIONAL 5

Micropro
£399

Years ago it became the 'standard word processor'. It has many features, and 'WordStar' keystrokes are the standard by which all other packages are judged. Version 5 offers an improved interface. It is a pity that such a popular package is still seriously flawed.
01-643 8666

● WRITER 1295

Logotron
£12.95

The low price of this budget software more than makes up for the snail's pace of its spelling checker.
01-359 3594

AMIGA WORD PROCESSORS

● PROTEXT

Arnor
£99.95

Protext is an easy to learn word processor with powerful text handling and file manipulation. The mail merge facilities are so comprehensive that you can look on the stored commands as a programming language for mail housekeeping. A good spelling checker and available on many other machines.
0733 68909.

● KIND WORDS 2

Amiga Centre Scotland
£49.95

Seemingly good value word processor for under fifty quid. Spell checker included and also the ability to import graphics. The current version includes A dictionary, thesaurus and various fonts. If you intend to upgrade to DTP, it's worth seriously considering contacting HB Marketing on 0753 686000 who include Kind Words in their 'Publisher's Choice' DTP package at under £100.
031-557 4242

● SCRIBBLE (PLATINUM EDITION)

HB Marketing
£49.95

The updated and upgraded version of the already popular *Scribble* . Very simple to use and with a spelling checker and mail merge facility. Text can be reformatted as you type. No graphic functions but very simple to use.
0753 686000

● WORDPERFECT

WordPerfect UK
£293.25

WordPerfect is a full featured heavyweight word processor with a price to match. This almost £300 package includes over 500 pages of manual and a huge dictionary /spelling checker/thesaurus. A Command line interpreter can be called from within the program simplifying the running of multiple environments.
0932 850500

ST WORD PROCESSORS

● FIRST WORD PLUS 3

Electric Distribution
£79.95

First Word comes bundled with the ST and for that reason, First Word Plus makes a logical upgrade with its ability to handle graphics and capture screens directly in the Degas format. Many good features such as column printing, mail merge, and a spelling checker, but the operation can be tedious and there's no index in the manual.
0480 496789

● WORD WRITER 1.0

Electric Distribution.
£49.95

What you see is what you get (WYSIWYG) The spelling, merging and thesaurus of this program are well integrated and all in all the program is easy to use. There are user definable routines and an intuitive typist will soon come to grips with it. There is no graphic importation facility and combining layouts in the same document is awkward.
0480 496789

● PROTEXT

Arnor
£99.95

Protext turns up on all of the popular machines and for sheer ability at handling text and files, takes a lot of beating. The same things that apply to the Amiga version, also apply to the ST Fully keyboard driven, ST Protext kicks the GEM environment out in favour of its own.
0773 68909

➤

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On-Site Maintenance	£58

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Hewlett-Packard Deskjet Plus, 300dpi Inkjet	£649
Juki 7100, 24 Pin dot matrix	£399
Panasonic KXP1124, 24 Pin dot matrix	£250
Panasonic KXP1540, 24 Pin, 136 col	£449
Panasonic KSP1180, 9 Pin, 80 col	£179
Qume WP, 300dpi LCS, 6PPM	£815
Qume CrystalPrint II, 300dpi LCS, 6PPM	£1150

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CAB SOLUTIONS ARE MAIL ORDER ONLY

● THAT'S WRITE
Cavendish
£99.95

This popular program puts the emphasis on the printed word and produces excellent hard copy. You can design a font, grab a screen or utilise the auto-indexing feature. There are many unique features but the manual is quirky and the WYSIWYG display has some weird fonts on screen.
01-323 4761

● WORDUP
HB Marketing
£59.95

More a document processor than a word processor, Wordup is the first step toward DTP having features such as graphics, text flow, graphic import, type sizes and styles. Ideal for producing newsletters and impressive documents. Unfortunately, there is no way of importing other fonts and a spelling checker is noticeable by its absence
0753 686000

PCW WORD PROCESSORS

● LOCOSCRIPT 2
Locomotive Software
£25 including p&p

LocoScript 1 is bundled with the PCW8256 and 8512. LocoScript 2 comes free with the PCW 9512. Therefore the obvious upgrade for all PCW 8256 and 8512 owners who want a little more speed and support for foreign character sets is LocoScript 2. They still haven't remembered the word counter and it still works at the speed of a snail in reverse but some people cut their teeth on Locoscript and will probably like it.

Strange that Locoscript 2, with all its fonts and foreign symbols and graphics abilities, is bundled with a computer with a daisywheel printer that has no need or use for it.
0306 740606

● PROTEXT
Arnor
£59.95

Protext PCW works under CP/M and is mobile between PCW and CPC computers (The same disk works in both, honest!). A stalwart user of Locoscript may grumble for a few seconds but the lightning fast file handling will soon produce another convert. Mail merging, column printing, two file editing and with an in-built spell checker. Using the M: drive it becomes faster than a speeding bullet.

If you own a PCW and you haven't got this program, you are wasting your machine's potential.
0733 68909

● MINI OFFICE
Database
£30.00

Mini Office is a five-piece applications package of which the word processor is just one part. If you only type the occasional letter, want to store the family finances in a spreadsheet and catalogue your records in a database, buy it. If you have serious word processing in mind, it is probably not your best choice.
0625 878888 or 051-357 2961

● NEWWORD
Newtar
£70

A WordStar clone for people who were trained on that standard word processor and are unwilling to change. Flexible and powerful, but probably best left to those addicted to the original it is based on.
0245 265017

CPC WORD PROCESSORS

● PROTEXT
Arnor
£19.95 Tape
£26.95 Disk
£39.95 Rom

It is worth buying a Romboard and Protext, for the sheer enjoyment of instant loading non-memory-resident software. A couple of keystrokes and the program's there. No waiting around while tapes chunder or disks whirr. File size is limited to 22K (disk version) or 38K (ROM Version) but 38K is plenty long for a chapter of a book, so it isn't a real restriction .A straw poll of the journalists on Amstrad Action revealed that they were all using Protext on ROM. Enough said.
0733 68909

● MINI OFFICE 2
£14.95 Tape
£19.95 Disk

Part of the five-piece applications suite, the word processor is OK for the occasional letter but not really a contender for the hard work stakes.Bundled with database, spreadsheet, graphics and comms, it is very good value for fifteen quid, but only for occasional use.
0625 878888

● TASWORD
Tasman
£19.95 Tape
£24.95 Disk

Different versions for the 464, 664, and 6128 use the machine's features to the best advantage. The disk versions include a mail merger, and printer control is easy. An easy to drive program with a slightly slow text-handling ability but nonetheless, excellent value. A separate menu customises the program to run to your specification.
0532 438301

● BRUNWORD
Brunning Software
£30 6128 disk
£25 464 disk

A word processor, spelling checker and card filer that work in 40, 80, and 128 column modes. This excellent program is easy to learn, good value and just sneaks past Tasword as second in the CPC stakes. This one would be ideal for a small club or society who wanted to update their membership using a simple data filing system. ➤

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C64 WORD PROCESSORS

● EASY SCRIPT

£50
Mail Order Only

It's a good all round word processor that's no longer in production. Mail order houses are your best bet to find it. It only works in 40 column mode but has many features and is easy to drive. Good Value.

● PAPERCLIP

£50
Mail Order Only

This is reckoned to be the best C64 word processor around. It can work in 40 or 80 column mode, has a spelling checker and the facility to write your own macros. Two document working is supported and the only thing going against it is its lack of suppliers. Difficult to find but worth the effort.

SPECTRUM WPs

● TASWORD

Tasman Software
£13.95 Plus 2
£19.95 Plus 3

The only contender in the Spectrum market, with different versions supporting each machine. It runs very slowly at times, but puts the Spectrum firmly on the word processing map and has options to customise and speed up the routines. Plenty of help on screen and mail merging as well.
0532 438301

BBC WORD PROCESSORS

● WORDWISE PLUS

£56.35
Computer Concepts

An early offering for the Beeb that works in 40 column mode. 80 columns can be seen in preview mode. Very quick and intuitive.Plenty of help in the manual and a facility for embedded print codes, but be prepared to work at it. Macros are supported, and it is also available in the instant-load ROM format.
0442 63933

● INTERWORD

£56.35
Computer Concepts

Part of the 'Inter' integrated suite of programs. An easy to use 80 column word processor with spelling checker. ROM versions of the whole 'Inter' range available.
0442 63933

● VIEW 3

MicroPower
£44.95

This ROM-only 80 column word processor limits the size of document that you can use, but is nonetheless easy to use and functional.
0532 436300

ARCHIMEDES WPs

The Archimedes is capable of using BBC word processors, via its BBC emulation mode. To confuse matters even more, there are different versions of Interword, View 3 and Wordwise Plus, which work on the Archimedes under BBC emulation. The ROM versions of the BBC word processors will work on the Archimedes via a 'podule' which can be attached to an archie. An alternative route is to use a PC word processor under PC Emulation. A memory resident program might be the elegant solution.

● FIRST WORD PLUS

£79.95
Acornsoft

Ported from the ST, this program does everything that the ST version does and more beside. Printers are well supported, the spelling checker is quick and functional and there is a facility to import graphics
0223 245200

QL WORD PROCESSORS

● TEXT 87

£45
Software 87

Although the basic Quill comes bundled with the QL, this is a better option for the penning of serious work.It is quick, supports various fonts and can work in columns. The most powerful package for the QL

ATARI 8 BIT WPS

● ATARIWRITER

£37.95
Mail Order Only.

This one is difficult to find, but years of trudging round looking are worth it. It has two column printing, two document editing , block facilities and a spelling checker.

● PAPERCLIP

£50
Mail Order Only

Again, you'll have to look for it, but it's still available mail order. Two document, two column mode, spelling checker and macros all supported.

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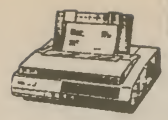

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PCW8512	399		
PCW9512	424		
PC1512SD	364	438	
PC1512DD	438	514	
PC1512HD	559	636	
PC1640SD	458	544	628
PC1640DD	518	597	682
PC1640HD	688	778	858

SOFT-INC MON COL	12"	14"
PC2086SD 538	618	699 786
PC2086DD 598	679	768 849
PC2086HD 765	851	936 1021

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Below Inc Maintenance

PC1286SD	750	835	920 1005
PC2286DD	851	936	1021 1106
PC2286HD	1021	1106	1191 1276
PC1386SD	1180	1265	1351 1436
PC2386HD	1702	1787	1872 1957

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MODEL	MON	COL
PCS86SD	562	719
PCS86DD	630	803
PCS86HD	803	976
PCS286DD	889	1062
PCS286HD20	990	1149
PCS286HD40	1062	1235

All PCS have VGA Monitors

COMMODORE

NEW STARTER PACK RANGE

MODEL	MON	COL	VGA	VGA
PC10SD	485	625	645	725
PC10DD	535	665	685	775
PC20HD	685	795	855	945
AT80286 12MHZ EGA				
PC30HD20	995	1155	-	-
PC40HD40			1240	1399
AT80386 16MHZ 1MB RAM				
PC50HD40			1729	1892
PC50HD100			2025	2215
AT80386 25MHZ 2MB RAM				
PC60HD80			3380	3541
PC60HD200			4082	4243

All Commodores come with 12 Months on site warranty

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HYUNDAI

MODEL	MON	COL	EGA	VGA
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XT-D/D	469	609	759	819
XT-HD20	599	749	899	959
XT-HD30	619	769	919	979
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AT286X-SD	599	775	849	899
AT286X-HD	799	975	1049	1099
SUPER 386S 1MB 16MHZ VGA				
AT386SX	995	1129	SD16Mhz	
AT386C	1241	1410	SD20Mhz	
PORTABLE				
LT3 AT 1MB RAM 20MB			1399	

SHARP

PORTABLES

4602 DUAL DISK XT	829
4641 40MB XT	1419
5541 40MB AT VGA	2269

AKHTER

MODEL	MON	COL	VGM	VGC
PC/XT				
MINI-PC	479	625	S/D	
MINI-PC	538	684	D/D	
MINI-PC	740	899	H/D	
AT286-12SD			926	1099
AT286-12HD40			1207	1385
AT286-16SD			1020	1198
AT286-16HD40			1299	1479
AT386-16SD			1085	1263
AT386-16HD40			1366	1545
AT386-20SD			1320	1498
AT386-20HD40			1599	1779
AT386-25SD			1695	1873
AT386-25HD40			1975	2154
AT386-25HD100 *			2538	2716
AT386-25HD200 *			2895	3091
AT386-25HD300 *			3382	3560

"*" = Floor Standing
All above Include On-Site-Maint

STAR

MODEL	SPEED	PRICE
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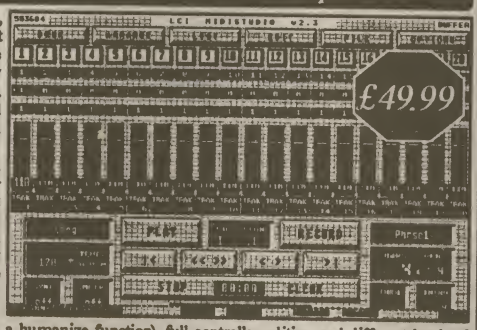

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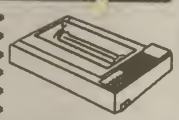

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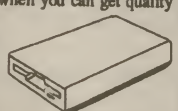

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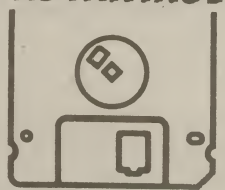

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ATARI

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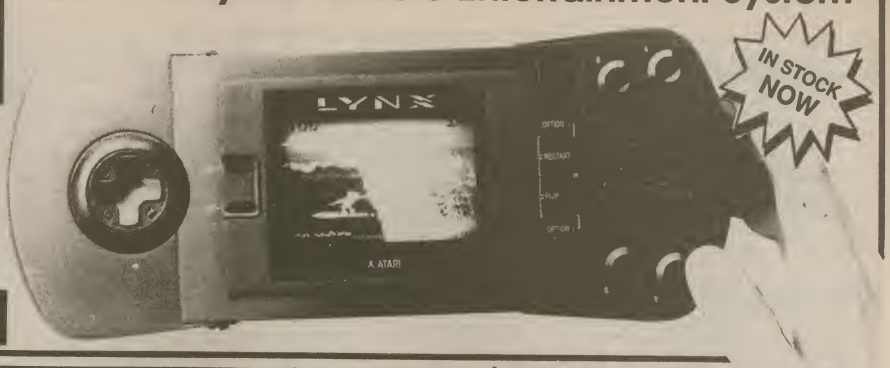

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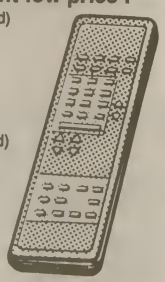

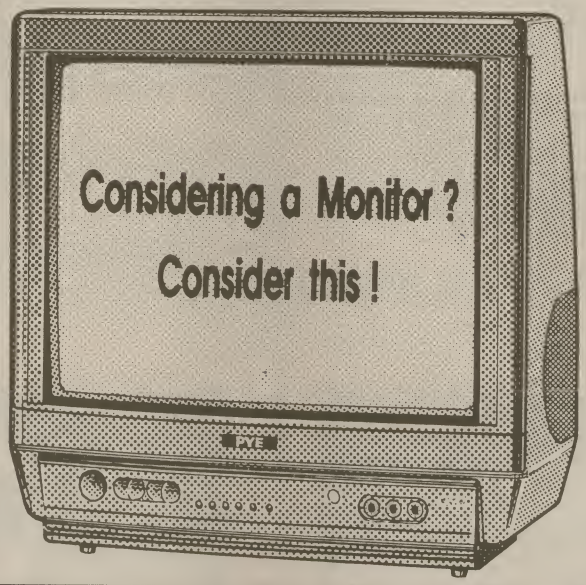

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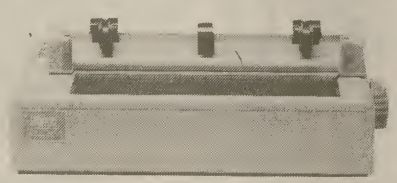

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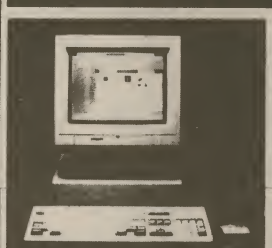

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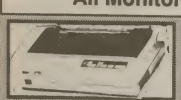

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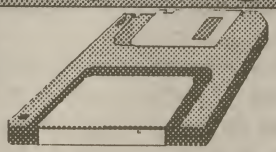

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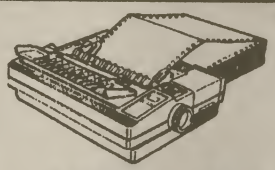

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● USER GROUPS

64 (Tape) not disk – users club about to start up – going global soon. Trade, Demos, comps: For details S.A.E. to: D. Mason, Ethorpe Hotel, Gerrards Cross, Bucks, SL9 8HY.

ADVENTURE enthusiast seeks contacts to exchange ideas etc for ST and PC games. Mr S Lucas, 47 Longcroft Lane, Cheadle Hulme, Cheshire.

ANY computer users who use Klaver Music Notation interested in forming/joining a user group; ring Mike on 01 520 5223.

BBC contacts wanted to exchange software, hints, tips etc. All letters replied to, write to K. Scotney, 17 Cromer Avenue, Burley, Lancs BB10 3HA.

BOURNEMOUTH and POOLE Atari User Group. Support for 8 Bit and ST. Monthly meetings. Membership £8.00. Quarterly Newsletter 8i16, £3.80 four issues. Details write to: 248 Wimborne Road, Oakdale, Poole, Dorset.

CALLING all hackers anyone interested in setting up a society write to me, Whizz Kidd's and hardware freaks welcome, all letters answered and treated in strictest confidence.

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DISK magazine for Amiga freaks. Send Submission on disk to: Arthur Wyatt, 68 Shefford Road, Meppershall, Shefford, Beds. Submission disks get returned with magazine on, blanks returned as blanks.

DOES anyone know of an ST user club in the Wirral/Merseyside area that is open to membership? Please ring 051 678 8519.

DOES anyone know of an ST user group in the Reading / Wokingham area? If so please phone: Matthew by Tel: 0734 788085.

GWYNEDD, N. WALES. ST User Group. I want to get in touch with all local ST Users to form a new group. Contact S. Rammerling, Clogwyn Plas Gwyn, Pwllheli, Gwynedd, N. Wales, LLS 36UA.

HYPERPAD – interested in forming a user group? SAE to Dave Langstaff, 78 Harrison Road, Swaythling, Southampton, SD2 37J.

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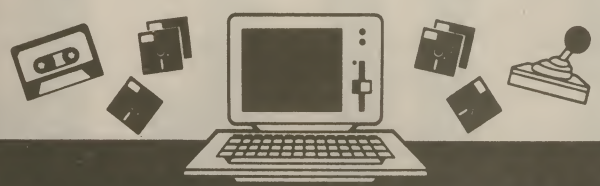

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THE PD COLUMN

There is a lot of software out there available for the price of a disk. A new weekly column by Jerry Glenwright explores the world of the public domain.

You've made a big investment in that shiny computer of which you're so justly proud. The second drive and RAM upgrade costs an arm and leg but it was worth it – now you can access all that really sexy software that only powerful systems can use to the full. At least, that is, if you could afford it.

After investing your savings into the hardware, serious packages costing upwards of £50 and even games at 25 quid seem like a major outlay. You don't want to sell the kids into slavery just to afford a bit of software, but what's the choice?

Come again? PD software? Yeah, virus-ridden, obscure, bugged utilities that only propeller heads use, right? Wrong! The public domain contains some of the best software around for any machine.

Many of today's well-known and respected commercial offerings started life in the public domain, some even return to the free life after considerable sales (witness the recent re-release of the *Ani-ST* graphics package into the public domain after a spell as a commercial product), but even programs whose scope limits them fairly and squarely to an interested few are sometimes of incredible quality and well worth rummaging for.

Best of all, public domain software is entirely free. Authors have said that their programs can be copied and distributed at will without any payment (providing that the software remains in its original state and includes doc files).

Acquire a fun game or useful application from a bulletin board or PD library and you can copy it and pass it around to all your friends and they can give their public domain software to you – you can have your cake and eat it! Many hundreds of megabytes of PD software exist and there are lots of libraries and bulletin boards distributing the stuff.

Everything from word processors, spreadsheets, databases, programming utilities, languages, games and comms applications to disk utilities, astronomical, educational and adventure programs, from the sublime to the ridiculous and back again.

Indeed in many situations, the public domain is the only place where you'll find the solution to a particular problem.

SHARE PRICES

With the acceptance of PD software, programmers soon realised that hand to hand distribution was incredibly effective. Upload a game to a bulletin board on Monday and it will be all over the UK by Friday. Perhaps this chain of distribution could be used to sell 'not-quite' public domain, too?

Users of public domain software occasionally sent off small donations as a form of thanks to authors of PD programs; maybe programmers could actually ask for a small sum and provide documentation on paper and program updates in return? Thus shareware was born, and although the concept isn't quite as popular here in the UK as it is in the United States, shareware is a growing market with many good programs available for a very small fee. Try a program and if you like it, send off a tenner or so to the author. In return you'll receive regular updates or an enhanced version and printed documentation.

So. You're convinced that PD is a good idea and can't wait to get your hands on all those free goodies. But what's available for your machine?

PC AND COMPATIBLES

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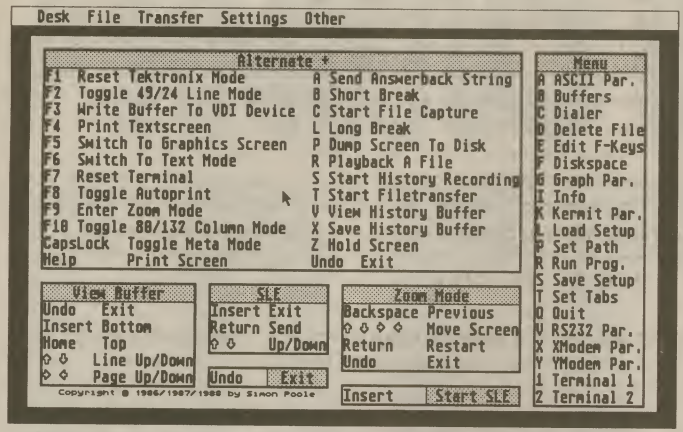


• **Uniterm *features lots of pop-up menus, which means you never get stuck.***

business and productivity applications and programming utilities, but there are some games and this week, I'm going to throw caution to the four winds and review a game which, although it's been around for a while, never ceases to enthrall players both old and young.

Beast is a game which places you into the jaws of a horde of attacking beasts bent upon your destruction. The action takes place on a full screen grid containing movable blocks. At the start of a new game you're positioned at random within the grid and must manoeuvre blocks to form a prison to encase the beasts. Sounds easy? Well, there's a little more to it than that, because the monsters are aware of your every movement and can think ahead to likely locations in which to catch you. Moving this way and that, they gradually surround and bear down until you succumb.

If you manage to entrap the beasts, you're rewarded with points then dumped into the next level. In the latter stages of the game, the beasts are almost impossible to imprison and only those strong on resolve will survive.

Combining elements of both arcade and strategy games, *Beast* is a fiendishly difficult and super-addictive romp.

ATARI ST

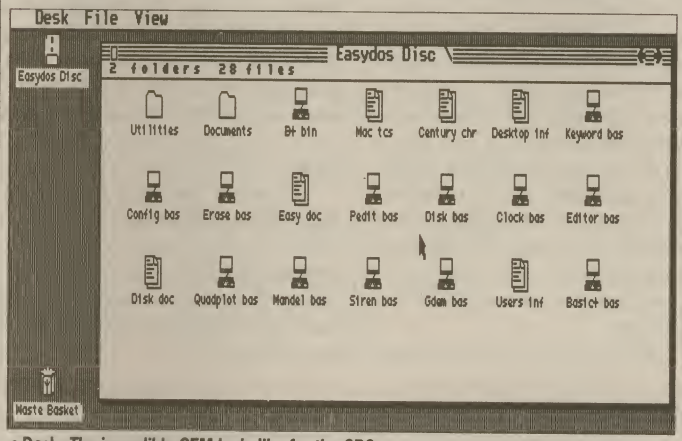
Due to its popularity throughout Europe, the ST has an enormous quantity of excellent PD available, some of which can't be beaten. Most ST owners are introduced immediately to the concept of public domain – there are several PD programs in the box with the machine, including the excellent CP/M emulator. But what else is available?

Due to the inclusion of a standard RS232 port, the ST is popular among comms enthusiasts, but how many know that the best comms package available for the ST is in the public domain?

Uniterm, now in its umpteenth revision, is a monster of a program. At its lowest level, *Uniterm* provides emulation for a variety of common terminals including VT52, VT100, VT200, Tektronix and so on. Nothing special about that you may think, after all, the ST comes with a 'built in' VT52 emulator. Sure, but *Uniterm* offers a whole lot more.

A huge transmission capture buffer, automatic dialling phone book, vector graphics, fully-functioned editor, macros and support for Y-modem and Kermit, make *Uniterm* the best communications package around bar none.

Booting, you're presented with a standard 'terminal' window, with a status bar at the bottom of the screen. This informs you of the current state of the capture buffer, whether you're on-line or not and so on. But what makes *Uniterm* really special is that you can pop up menus while communicating! All functions are accessible via these pop-ups and a menu bar (when off line) or, if you



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prefer, a series of hot-keys enable swift use for power users.

Uniterm is simply to use, comprehensive, and comes with the biggest doc file this side of *War and Peace*. The docs are on the disk in the form of a word processed file which you can print out or read on screen, and have a full index so there are never any problems locating information. For anyone even vaguely interested in comms, *Uniterm* is a must.

AMSTRAD CPC

What, public domain software available for an 8-bit machine – In fact, there's a wealth of excellent software for the CPC, both CP/M-based and home-grown CPC-specific stuff that will keep you amused for a very long time.

Now, everyone knows how good the CPC is. Built-in disk drive, nice keyboard, its own monitor, but sometimes when you pass Dixon's and see all those shiny new STs in the window, don't you just wish the CPC had a desktop front-end like the ST's GEM? It must be such fun to simply roll a mouse around, pointing at the files you want to run or delete and creating sub-directories easily by selecting the option from a menu bar via an on-screen pointer.

Well, be left out no longer, for David Wild of DW Software has written a GEM-lookalike which is a remarkable copy of the ST's friendly operating system and which the kind proprietor has released into the public domain – isn't he sweet?

Desk really is an amazing program. Boot up the CPC as normal and `RUN "DESK` at the system prompt. Within seconds, your CPC will display a desktop complete with disk and trash icons and a menu bar. To see what's on the current disk simply move the arrow pointer to the drive icon and click ('clicking' is the action of depressing a mouse button, joystick button or key in order to select an item.). A window will open and all of the files, subdirectories and programs on the disk will be displayed.

Subdirectories are represented by little folder icons, programs by a computer icon and documents/files by a sheet of paper. If you want to run a program, move the pointer to its icon and click. The application will fire up. If there's anything to be deleted, it can be dragged to the trashcan by clicking, holding down the mouse/joystick/keyboard button and dragging the icon.

The program can be controlled with a mouse (Logitech or AMX), joystick or the cursor keys and is joy to use. Once you've controlled a computer via a graphical front-end, you'll never want to go back to the obscure commands and boring monotony of a system prompt and command line interpreter. ■

WHERE TO GO...

Many PD libraries advertise in Shopping Express, but these are also worth a look.

ATARI ST

• Goodman Enterprises, 16 Conrad Close, Meir Hay Estate, Longton, Stoke-on-Trent ST3 1SW. The Goodman library is one of the best, with all the latest PD always in stock - and Mike Goodman is a friendly guy, always willing to chat!

• Page 6, PO Box 54, Stafford ST16 1DR. Page was one of the first PD libraries and ranks with the best. The company also stocks a wide range of Atari 8-bit PD (reviewed in the coming weeks) and publishes *New Atari User* magazine.

CP/M

• The CP/M User Group, 72 Mill Road, Hawley, Kent DA2 7RZ. Help, advice and more PD then you can shake a stick at.

COMMODORE AMIGA

• George Thompson Associates, Dippen, Brodick, Aran,Scotland KA27 8RN. GTA stock a variety of products for Commodore's baby and have an excellent PD library.

• Softville PD Service, Unit 5, Stratfield Park, Elettra Avenue, Waterlooville, Hampshire PO7 7XN. A comprehensive library which also stocks ST and PC PD too.

AMSTRAD CPC

• Wacci UK, 9 South Close, Twickenham TW2 5JE. Bung a couple quid in the post for a latest copy of the *Wacci* fanzine (a very good read...) plus comprehensive lists of PD.

• DW Software, 62 Lascelles Avenue, Withernsea, North Humberside HU19 2EB. The source of *Desk* and many other remarkable PD programs all written by DW himself!

PC AND COMPATIBLES

• Public Domain Software Library, Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL. The first in the UK.

• Seltec Computer Products LTD, Northumberland House, Staines Business Centre, Gresham Road, Staines, Middlesex TW18 2AP. Seltec stock a large range of quality shareware.

APPLE MAC

• The Macintosh User Group UK, 55 Linkside Avenue, Oxford OX2 8JE. A users group? Yes! PD library? Yes! Excellent club magazine? Yes! What are you waiting for?

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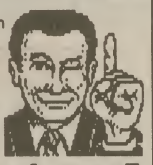
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Virgin has just released the official Word Cup game. Trenton Webb couldn't resist putting on his boots....

• *The Amiga version's graphics leave Kick Off for dead.*

• *Italia '90 on the CPC: nifty graphics.*

If '89 was the year of *Kick Off*, 1990 could be the year it's kicked in. A horde of footie games is set to storm the software scene, all trying grab some World Cup glory (and sales). Virgin has stolen the march on the competition with *World Cup Soccer – Italia '90*. As well as being FIFA's officially-endorsed computer striker, it's the first to hit the streets.

Football, it is often said, is a game of two halves. It is also commonly believed to involve 22 players. In *Italia '90* this isn't exactly the case because, just like the coin-op, a mere seven men are visible per squad and there's only one half! Its arcade heritage, though, does ensure the playability shines through and that's essential. Having shoved your 50p into an arcade, you would be pretty miffed if it barely saw you through a team selection section. So, there are no fancy tactical options, just straightforward soccer action.

Before the glory comes the slog. There's no automatic selection here, and each team must fight it out against 'glamour' sides like the USA and Japan to earn a place in the finals. After winning three qualifying games it's off to Italy, where the teams are household names and the skill levels massively improved.

Every footie game since *Matchday* has proudly touted at least one revolutionary feature, setting itself apart from the multitudes that have gone before. *Italia '90*'s claim to football fame is its goalmouth action view. As soon as an attacking player breaks into the 18-yard box and gets clear of defenders, the perspective switches from the 'regular' overhead view to a ground-level look at the goalkeeper and player alone.

Dancing from side to side, striker and keeper try to outwit each other. If the goalie strays, then the centre forward can try to smash it past him. The guy in the green jersey can dive, but if the timing is right then he doesn't really stand a chance. Naturally, you can't sit in the six-yard box all day bobbing and weaving; wait too long and the real world of defenders jog you brutally back into overhead reality by nicking the ball.

Let's have a look at some of the versions.

ON THE CPC

On the CPC the graphics initially grab the attention. The sprites are realistic runners and can easily be sent scampering after any loose ball. The guy you currently control is easily recognisable by the huge white arrow floating above his head, and you can send him kicking and tackling at the stab of a button. The occasional whistle interrupts the action, but it's the animation and the playability that make the real noise.

These boys in purple (the away strip!) are the biz. Until now CPC soccer has been dominated by *Emlyn Hughes International Soccer* and *Kick Off*. The former has excellent controllable sprites but isn't exactly hectic. *Kick Off* is a high-paced charge into the footie unknown, yet is a graphic catastrophe. *Italia '90* looks set to pip them both to the goalpost. It is intense, clear and remains fun to play.

THE PC VERSION

On the PC, *Italia '90* is one of the best lookers but one of the poorest players. The power's there for the pictures, but this cannot compensate for the on-pitch action. The speed is better than that of the 8-bits, and the sprites are clean enough to shame many other 16-bit offerings, but the matches are confused. The preset keys are awkward to use, and the overall control exhibits a vague, distant feel.

The game is the same frenetic end-to-end scramble, with the highly enjoyable goalmouth sequences – scenes which are made even better by the increased flexibility of the keeper and number of angles from which strikers can shoot. But the intensity of the other formats is lacking, leaving *Italia '90* another solid football sim that fails to make the world-beater grade.

AMIGA ACTION

The *Italia '90* contingent faces its hardest challenge on the Amiga, for it's here that the *Kick Off* legend was born. The graphics leave the Anco side for dead. Awash with detail, the players are neat caricatures of the tidier end of football – none of that trendy long hair Mr Waddle! The ref appears in a window to announce corners and penalties, tracksuited trainers jog on with a stretcher to collect any player debris, while the pitch is surrounded by countless photographers and police. Even computer simulations, it seems, need a few boys in blue on the touch-lines to keep the place in order!

Italia '90 is exciting to play. The players are fast and controllable, but easily tackled – making those end-to-end runs a rarity to be savoured. Predictably, the goalmouth scenes are at their best here, the clarity of the keeper/striker confrontation giving each Amiga-based episode *High Noon* overtones.The synthesised speech does little to enhance the game – the talking, as with all football, just getting in the way.

Gamewise, *Italia '90* is no *Kick Off* beater, but the comparison is far from fair. *Kick Off* is a simulation, where skill can be developed, the on-pitch radar used to increase pass accuracy, while the correct choice of formation is as important as on-pitch ability. *Italia '90* on the other hand is an arcade conversion. It emphasises the player's ability to control the action on-screen, competing within rigid parameters. This makes the game more immediate and more fun to play against the machine.

Italia '90 lacks the staying power of *Kick Off*, but is strong enough to keep even the most determined player torn between TV and monitor for that glorious month of soccer megahype, the World Cup. ■

THE OTHERS

World Cup Soccer – Italia '90 is of course available on all the major formats. These picture show how the other formats, due out in May, are shaping up.

ON THE SUBS' BENCH

As well as competing with the past masters of the football genre, *Italia '90* must tackle a number of other titles due out shortly, all seeking to cash in on the sporting event of the year. US Gold, still no doubt smarting from its 1986 trip to the *World Cup Carnival*, is touting *Italy 1990*. Empire is pushing a World Cup compilation (which includes the seemingly omnipresent *Kick Off*) while Linel, a Swiss outfit, has *World Cup 1990* up its sleeve. Titles such as *Manchester United* (Krisalis), *Liverpool* (Grandslam) and *Adidas World Championship Football* (Ocean) can only benefit by release in such a football intensive season. This summer it seems the national game will make last year's bat-bonanza look tiny in comparison.

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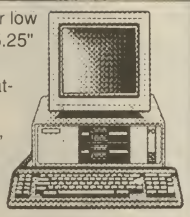

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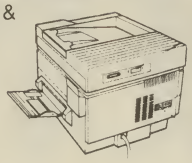

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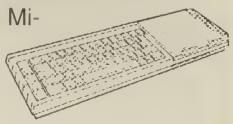

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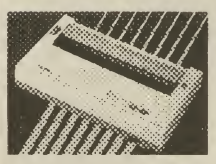

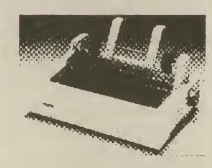

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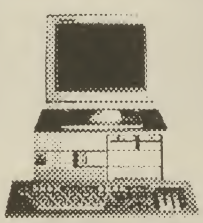

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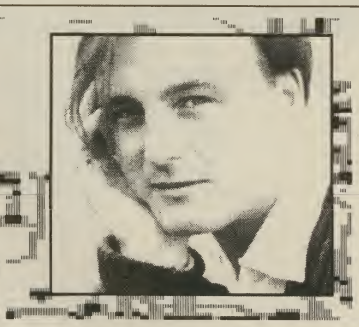


Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Uncle Tech Tip, he'll see you right. Send your sorry stories to Uncle TT, 30 Monmouth Street, Bath BA1 2AP. There's a prize for the most pitiful tale

HELP! Megadriven

I'm writing to ask your advice about buying a Sega Megadrive. My local computer shop is selling them, and I have just put a deposit on one. What I would like to know is will the British cartridges work on the one I am about to buy? The shop said it will work fine with the British cartridges when they're released later this year.

The Megadrive has a cartridge lock on it and I understand that the British one will not have one. Also the shop said that they guarantee them for 12 months and that they will work fine with RGB monitors and TVs. I asked if they had modified the Megadrives themselves and they said no, they were modified in Japan.

Please could you tell me if it is all right to buy one of these as I would like to be able to buy British cartridges when they get launched.
I Jennings, Middlesbrough, Cleveland.

As far as our resident Sega expert Steve Jarratt (editor of *S*, the only mag for Sega owners, £1.95 from a newsagent near you, plug ends) can tell, there may well be compatibility problems for owners of grey imports. It seems that the cartridges will not necessarily fit, and although it may be possible to nail-file them into shape you'd be better off waiting for the official British version later in the year.

HELP! TV tuner

If I bought a TV tuner for my Amstrad CPC464, could I use an Atari 800XL and an Atari 2600 games console with it and get a colour picture? If it isn't as simple as that, could you give me a brief explanation please?
Jean Benford, London SW2 1HX.

Buy the Amstrad TV tuner Jean, it will work perfectly with both the Atari machines.

HELP! Irritating Citizen

I have been using the demo of *Turbo ST* from *ST Format*, and I like it very much. Please could you tell me how much RAM it takes up, and if I can use it with *First Word Plus* which I use mainly for letter writing? I have a 1Mb STFM.

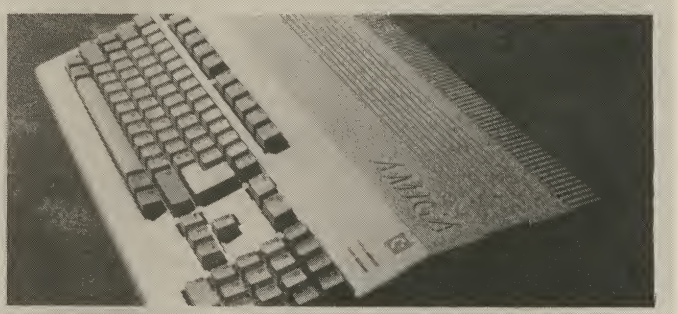
I have an irritating problem with a Citizen 120 printer and *First Word Plus*. I set the printer to near letter quality mode, but after the first page, the printer reverts to normal printing. The printer driver I am using is the FX Epson which, according to the manual, is the one I should use. How can I get the printer to print all the pages in near letter quality? Do I have to amend the driver? I have read the manual but the instructions are a bit sparse to say the least! I have clicked on the appropriate part of the printing instructions on the printing menu but this has no effect on the printing. Any help you can give me would be greatly appreciated.
Jan Lord, Selby, North Yorkshire.

Turbo ST really is a cleverly programmed and useful utility. The code uses less than 30K of RAM and works perfectly with *First Word Plus* (I know, I've used the two together) as well as a range of other ST software.

As for the Citizen printer, I think if you use the machine almost exclusively to produce letters, then it may be easier simply to set the dip switches to provide continuous NLQ printing. If you need to run off the odd listing then you can set the printer temporarily to draft mode. This solution, although not elegant, is infinitely preferable to wading through reams of printer codes in the driver trying to track down the source of the problem. Dip switch settings will be available in the Citizen's manual.

Help! Amiga assembler

A few months ago I purchased a Commodore Amiga 500, and up until now I have only played games on it. I am now interested in learning to program and I would like to learn assembler. The problem is I do not know BASIC, but is it possible to learn assembler without first learning BASIC? If I bought an assembler, would it contain a book with instructions on how to program or would I have to buy a separate book on assembler. Lastly, could you recommend a good assembler?
S Riley, Westwood Heath, Birmingham.



• With the Amiga, the best place to start assembling is in the public domain.

You don't *need* to be a competent BASIC programmer in order to learn assembler. Having a working knowledge of any high-level language (so called because the commands are similar to English and don't provide direct access to the operating system) is a passport to understanding low-level languages such as assembler. Once you've learned all about loops, subroutines, variables, procedures and the like, the principles can be applied to all other languages.

And BASIC, being devised especially for beginners, is probably the best point at which to start programming – and it can be powerful too, as packages like Mandarin's AMOS extended BASIC prove.

However, with some application to a suitable text book, you could learn how to program in assembler without any previous knowledge of programming and you'd probably become a very good programmer. It depends very much upon the amount of effort you wish to invest in the process.

Most assemblers come with only the most rudimentary of texts detailing the running of that particular implementation of the assembler and no tutorial on programming in general. For that, you'd need to buy an additional text book (the Abacus range are very good and available from most good book stores) providing lessons in programming. With that – and your lack of programming proficiency – in mind, I'm going to recommend that you obtain an assembler from the public domain. There are some very good public domain (programs which the authors have said can be copied and distributed free of charge) assemblers and compilers, any one of which would give you a cheap start. If you then decided to pursue the project, you could buy a fully blown assembler which would probably be more sophisticated in its range of functions and provide a better (that is to say, more efficient) programming environment. Contact George Thompson Associates at Dippen, Brodick, Arran, Scotland KA27 8RN. For two or three pounds, you'll be able to try your hand at assembler programming and if you find it's not for you, abandon it without wasting heaps of money.

Help! Rotten fruit!

My wife has a Commodore PC1 (IBM compatible) with an external 3.5-inch disk drive and we wish to transfer many of the files from my Apricot PC (non-IBM compatible). Can you tell me why the computers will not read each others disks?

I can read from and write to both 360K and 720K floppy formats using the Commodore. I suspect the problem may be due to a lower disk capacity (when for-

matted) of the Apricot. The latter show 315,904 bytes in total disk space when using CHKDSK. Can you confirm if the Apricot's disks are formatted with eight sectors? If this is so, then that's probably the reason.

I have tried several methods and parameters of the FORMAT command on the Commodore to read the Apricot's disks. Sometimes it will read the directories and occasionally part of an Apricot file, but when it does the latter, the wrong file is typed when using TYPE at the MS-DOS prompt.

I can only use one method of formatting on the Apricot and that is via what is known as the Apricot Ladder System (a sort of pick and select display using a series of vertical blocks rather like a ladder). There is no MS-DOS format file on the Apricot's disks so I'm unable to try different format parameters.

I would consider using a serial link transfer, but I've no experience using this method. There is a comms software package for the Apricot and the *Mini Office Professional* package which incorporates a comms facility for the Commodore. Could these be used by direct link coupling both computers?
J Stock, Breaston, Derbyshire.

The Apricot really is a beastly little machine, isn't it? How they ever managed to foist such a dog on to an unsuspecting... anyway, enough of this griping. You didn't actually tell me which model Apricot you have, and yes it is important – really! Although the Apricot runs MS-DOS, it isn't PC compatible and only offers a modicum of similarity to the latter machine.

Consequently, the only way to successfully transfer word processor, database and other files is to use a serial link (as you so rightly suggest). Luckily, you have access to comms packages for both machines, so your problems are minimal. You'll have to buy a standard RS232 serial cable of course (you could make you own, but I think it may be a little ambitious) and these are readily available for about £12 (try Shopping Express – several advertisers are currently offering serial cables). Follow the instructions for both comms programs and use a high baud rate – 9,600 or even 19,200 if your software can handle it. It's a drag, but the only way I'm afraid.

HELP! MIDI mumbles

I am an Atari ST owner with a double drive and am looking into using its MIDI capabilities to produce music *(What, the disk drive? – Unc).*

I have available about £500-£700, and I am looking for a synthesiser plus software for sequencing and sampling. Being able to alter voices from the synth would be wanted too. I realise that the range of equipment and software is very large, but it can be confusing, for instance *MIDI Studio* is said to better than Steinberg *Pro24*, especially for value for money.

Should I perhaps start with low budget and public domain software at first and get better hardware? Where can you get second-hand synths from? There are too many questions to ask but if you could help I'd be most happy.
Jan Kellett, Wrexham, Clwyd.

Plump for the quality hardware every time! Spend as much is humanly possible on a synth and worry about driver software later. The best sequencing package in the world won't provide a poor synth with better features, but buy a fully-featured synth and even if your software can't take advantage of all the functions now, at least you know they're all there when you can afford some decent programs.

So, what should you buy? Well, looking through the latest copy of the Softville PD catalogue, I can see several programs well worth a look (remember, they're free...).

Synth is an automatic patch generation and archive program for the DX100 and CZ-101 synths and the disk containing this program, MUS5-SS, also includes *32Trackseq* a – not surprisingly – 32-track MIDI sequencer. Or how about *MIDIdrum* and *MIDIplay* – a fully programmable drum machine and a sequencer. These programs are both on disk MUS12-SS. And the list goes on. Get hold of the latest catalogue and have a rummage.

Probably the best place to search for second-hand synths is in the popular music papers. I my band days, *Melody Maker* and *Sounds* were the best places to look for instruments, record deals and other musos.

All that may have changed now, but cut along to Smiths and have a free read before buying, huh?

Also, check local music stores and evening newspapers, you may turn up something. Happy hunting! *(And don't miss next week's feature on ST music software – Ed)* ■

Help! Taking a STEp up the ladder to programming

I have recently purchased an Atari 520STE and I'm very happy with it despite recent put-downs in your magazine! The only problem is that I am currently using the ST-BASIC supplied in the Explorer pack.

This BASIC is totally and utterly hopeless, as I am sure you know already, and the *Atari Owners' Manual* is about as technical as a Famous Five book.

The other slight problem is that I own an Amstrad DMP2160 which is perfect for word processing using *First Word* (which, incidentally, works perfectly on my STE), but when I use it with the GDOS programs *Hyperdraw* and *Hyperpaint* it prints garbage. I know that my problems with the printer are because it is not totally compatible with the Epson FX80 printer driver, the only one supplied with GDOS, so where can I get a more suitable one? Or could I adapt the FX80 one and if so, how?

As for a new programming language it must be compiled for speed's sake and should have full graphics and sound facilities and should also allow me to write professional looking applications which can be run from the desktop. I have heard that either C or Modula-2 would probably be suitable and from what I have seen of them, they appear OK.

I would also like to able to control the STE's special music and graphics facilities without resorting to machine language. Is this possible using any current products? Which language and which specific package would you advise me to buy? I also have a very limited budget, £100 at most, preferably nearer £50.

As far as a technical guide is concerned, they seem to range from pamphlets to three-volume epics. Which would you advise? I will also need a good instruction book for my new programming language.

In the very distant future I would also like to buy a hard disk and second disk drive. Which ones are best?
Simon Kinahan, Crieff, Perthshire.

Although of – relatively – poor quality, the DMP2160 has proved to be a popular printer and has a number of followers. Why do I tell you this? Simple. Big followings mean big supplies of PD printer drivers. That's right, someone, somewhere will probably have constructed a printer driver especially for the Amstrad and it will even now, be lurking in the dark recesses of some public domain library.

Try contacting Softville PD Service at Unit 5, Stratfield Park, Elletra Avenue, Waterlooville, Hampshire PO7 7XN. Softville is an excellent library and will probably have what you're looking for.

Failing that, yes, you can write your own driver or modify the existing FX80 driver that was supplied with the Atari painting and drawing programs. This will involve looking up the correct control code sequences in the Amstrad's manual and substituting them for the corresponding commands in the FX80 driver.

How will you know which are the corresponding commands? That's the tricky part, and will probably involve you chasing around public libraries and Epson-owning friends in the hope of securing an FX80 manual. Keep trying – you'll succeed (eventually...)

A new programming language? Forget Modula-2. It enjoyed a brief flourish of interest among propeller heads who liked to discuss the language's limited merits (and exhibit their enormous knowledge in the process) on several of the more well-known conference services.

Modula-2 is crap!

There, I've got it out in the open and don't regret it one little bit (I can just feel 'Indignant of Surrey' putting pen to paper as I write). If you've already looked at BASIC and are even vaguely familiar with the old dinosaur, then you should stick with that.

The modern BASICs are really quite excellent, and enjoy only a passing similarity to the language of yesteryear's home computers. What's more, BASIC tends to be cheap and widely available.

Which one? HiSoft's BASIC is really very good and can be had for well under £50. Call HiSoft on 0525 718181.

If you don't fancy plain old ordinary BASIC, why not have a look at STOS? Although normally associated with games programming, STOS enables programmers to write truly professional looking applications of all types and has an uncommon turn of speed. STOS can be ordered by calling Mandarin Software on 0625 878888.

The STE's accompanying manual not good enough for the likes of you, huh? Right, well cut along to any High Street book store wherein you'll encounter the Abacus range of ST manuals covering a variety of topics including the hardware, operating system, hard and floppy drives and programming hints, tips and wrinkles in profusion.

Ranging in price from £12 to £20, the books are an excellent buy for those in the market for easily assimilated knowledge.

Until quite recently, ST owners were lucky to get a basic second floppy drive for under £120 and hard drives were outrageously expensive.

Now however, all that has changed. A quality replacement (or add-on) floppy drive can be had for under £80 (Source? Shopping Express) and a 20Mb hard drive for as little as £250.

I've used an Evesham Micros replacement floppy for a couple of years and have found it to be reliable, fast and well made, and heartily recommend the company.

As for hard drives, one of the best suppliers if Third Coast Technology which markets its brand of cheap but high-quality devices and offer good after-sales service.

Third Coast has a telephone at the end of number 0257 472444.

NEW STYLE MICRONET

Take a tentative step into the world of comms and it's easy to fall victim to a technobabble overdose that has you scurrying back into your shell. Mark Higham looks at how Micronet has made radical alterations to its service to appeal to newcomers and old hacks alike.

In the last few months Micronet has been busily contacting its subscribers to find out what makes the on-line system good and, more importantly, where its failings lie. By collating these ideas and adding in some of their own, the top brass at Micronet believe they have pinpointed the problems and eradicated them. Many changes have been made to implement these ideas, and the new system was recently unveiled.

Micronet is an on-line bulletin board system run by a division of British Telecom. The system itself is accessed through a gateway on Prestel and whereas Prestel is aimed at business, Micronet has its gaze firmly set on the leisure enthusiast. The system is made up of thousands of pages of information, which look very similar to the teletext pages available on Ceefax televisions.

The sections available are extraordinarily diverse – besides traditional news, television and music areas, you have chatlines where you talk to other people on-line at the same time, areas which cater specifically for your micro, PD software which can easily be downloaded and even on-line adventure games. The success of the system shows in its users – at present 15,000 people subscribe to Micronet, with the vast majority being PC, ST and Amiga owners, in that order.

P R E T E L 1a 0p
Main Index
1 NEWSDAY Observer Weekend File
News roundup,features,arts,TV & more
2 SPORTSEYE Cricket: live coverage
Grand National & sweepstake, football
3 LOOK! Poll tax questions?
4 GAMES CITY NEW SCI-FI ADVENTURE
50 AGRICULTURE 54 INSURANCE
51 BANKING 55 MICROCOMPUTING
52 BUSINESS 56 TELESHOPPING
53 EDUCATION 57 TRAVEL
6 MESSAGE SERVICES Mailbox,Telex Link
7 A-Z INDEXES to information & IPs
8 CUSTOMER GUIDE All about Prestel
9 WHAT'S NEW 6th-8th April

• The main menu screen informs you of what's available, highlighting interesting areas within the section so that you're encouraged to probe around.

GETTING ON-LINE

To access Micronet you need a modem and some comms software, but fortunately Micronet offers a starter pack to subscribers that includes everything you need to get on-line. Since the system is available via a local call from all over the country, it can be contacted at a very reasonable 55p per hour.

One of the most appealing improvements to Micronet is its support for a wider range of accessing speeds. You can now contact the system at 2,400 baud (240 characters per second) as opposed to the more usual 1,200 baud. Unfortunately, the modem in the starter pack only operates at the slower speed.

ALL CHANGE

If you've contacted Micronet before, the first thing you notice once you're into the system proper is the improvements to the menus. Whereas teletext pages are available on the TV using a three-digit page number, there are just too many pages to Micronet to make them that easily accessible. Instead, you can enter page numbers (which can be as many as nine digits) or a code word – for example `*WAVEGUIDE#` to look at the TV pages or `*PC SUPPORT#` to read news and reviews of PC software.

These machine-specific areas never used to be regularly updated, but all that's changed now. Previously the ST and Amiga sections were combined to form the 16/32 Club, and while that still exists, there are now new sections catering exclusively for each machine. These are updated every day by an editor who oversees his section. Queries are answered, the latest software and hardware is reviewed and news exclusive to either machine is available.

For those of you eager to get your hands on free software, the telesoftware service has now been expanded to give you access to a vast range of PD programs. New software is highlighted while the old is archived and therefore still available to the new user. The telesoftware service used to be available through a gateway which had the unfortunate knack of disconnecting users, but that has been updated to make downloading more reliable. Micronet bosses are looking at extending the number of download protocols supported so that a greater range of comms software can be used.

MAKING FRIENDS

The most popular areas of Micronet are the chatlines. With so many people contacting the system at all times of the day, the chance to use your keyboard and participate in debates, general discussions or gossip with other users is extremely entertaining. Chatlines are divided to cover different kinds of topics with three types of chatline available. There is the real-time chatline where people use their keyboard to 'talk' to other users on the same chatline. The other is an archived type – messages added to the chatline are retained and can be browsed through every time you log-on. Thus, a debate can take place over many months and between far more people.

A new kind of chatline has now also been added which is is a combination of the two – messages are archived so that you can read through previous ones to see how debates are progressing, but as new messages are added they appear at the bottom of your screen while you're reading through the old ones. In this way, you can join in the real-time conversation whenever you want.

These improvements to Micronet set it on the right course for the Nineties. Micronet makes your living room a meeting place where you can associate with others interested in the same kinds of subjects. With many sections to cater for all sorts of interests, it keeps you well-informed at the same time. ■

For more details about Micronet phone 0800 200700.

A WHOLE NEW SHADE

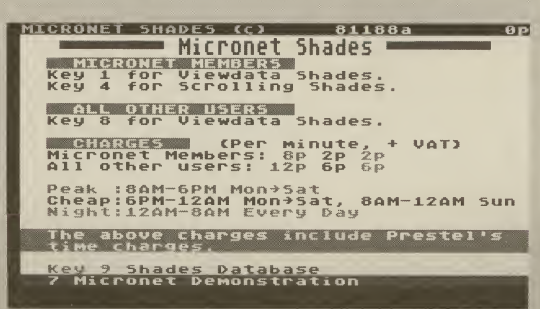
There are two areas of Micronet which attract subscribers in droves. Chatlines are one and the on-line adventure games are the other. *Shades* is one of these games and has been in existence for several years, but Micronet has just announced the addition of *Trash* – an adventure game designed to appeal to people not usually interested in the mythical land of wizards and warlocks serviced by *Shades*.

The beauty of these adventures is the chance to come across other characters in the game who are controlled by other subscribers rather than computer. In this way you can chat to them in character, seek help and make friends. *Shades* has become so popular that users regularly meet in London for social gatherings.

The new game, *Trash*, sets you the job of cleaning up the Universe. A test demo of the game has been available to selected subscribers all year, but the service was only officially unveiled last week. Time will tell how good it is, but the initial signs look excellent, with many applauding the new game environment.

MICRONET Gateway (c) 8680a 0p
Micronet
TRASH
*TRASH#
New Users
11 - What's Trash?
12 - How to Play
13 Charging Information
14 Conduct
15 Da Boss Celeb Chat Tonight (CUG)
21 Letters - Send one
22 News and Announcements
23 Trash Tips and Hint of the Week
25 Trash Chatline
7 Write to Da Boss 8 Trash Gateways
9 Shades 00 - Micronet

• Trash is the newest addition to the adventure scene on Micronet.


MICRONET SHADES (c) 81188a 0p
Micronet Shades
MICRONET MEMBERS
Key 1 for Viewdata Shades.
Key 4 for Scrolling Shades.
ALL OTHER USERS
Key 8 for Viewdata Shades.
CHARGES (Per minute, + VAT)
Micronet Members: 8p 2p 2p
All other users: 12p 6p 6p
Peak :8AM-6PM Mon→Sat
Cheap:6PM-12AM Mon→Sat, 8AM-12AM Sun
Night:12AM-8AM Every Day
The above charges include Prestel's time charges.
Key 9 Shades Database
7 Micronet Demonstration

• Shades is the long-running multi-user adventure game.

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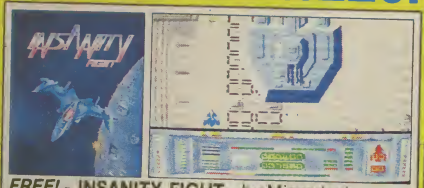
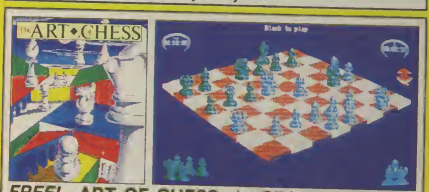
FREE! - AMEGAS - by Players

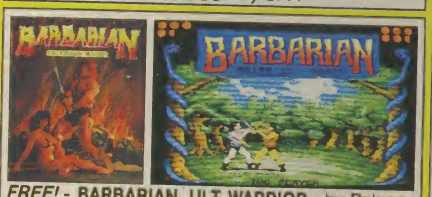


FREE! - INSANITY FIGHT - by Microdeal



FREE! - ART OF CHESS - by SPA

FREE! - MERCENARY COMP - by Novagen



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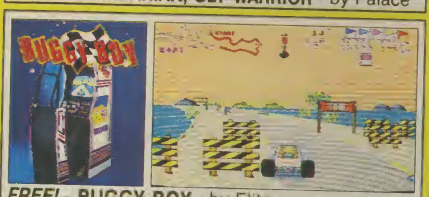
FREE! - TERRORPODS - by Psygnosis



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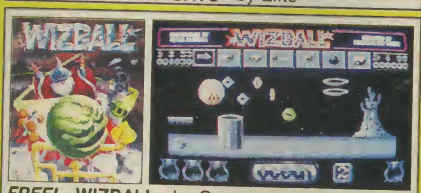
FREE! - THUNDERCATS - by Elite

FREE! - IKARI WARRIORS - by Elite



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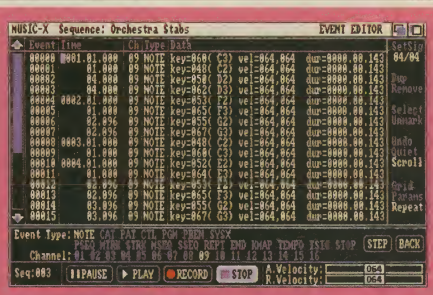
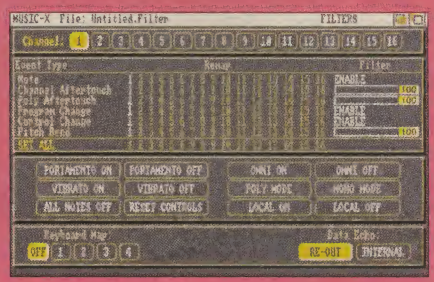
Do you already own a computer
If so, which one do you own?

MUSIC-X Perf: Helix.Perf
SEQUENCER
BEGIN END CUE1 CUE2 CUE3 CUE4 SET
PAUSE PLAY RECORD STOP
Bar Seq Bar Seq
2 Helix Contro
2 Helix Melody
Clock: 0002.01.133
00:00:02.04
STORE
EDIT
DELETE
PREVIEW
Memory: 65533/ Events
Seq Men Bars Channels CST Time Sequence Name Out
001 302 60 -S- Rel Helix Control Ex1
002 402 2 1 --- Rel Helix Melody / Bass Ex1 Off
003 302 2 2 --- Rel Helix Frills Ex1 Off
004 342 2 1 --- Rel Helix Cybernetic Ex1 Off

• *The main sequencing screen of* Music X. *Patterns are listed at the bottom of the screen, and the top-right corner lists them as they play.*





• *Top: Data editing a piece of music with* Music-X.
• *Above: Setting the MIDI filtering page.*

STARTING UP SEQUENCING

Last week we looked at the outlines of a music system. This week, and for the following six weeks, Jon Bates will give you the run down on what you can and can't do with a variety of machines, starting with the Commodore Amiga

The Amiga has arguably the best internal chip for music, and certainly the most widely used internal sound system. This means that it is an excellent computer for getting started with music, particularly if you chose a program that can not only use MIDI but also use the internal voices.

The internal chip can play up to four sounds at once through left and right channels, rather incorrectly called stereo – if we are going to be accurate, stereo is the same sound perceived from two slightly different positions. The smart part about it is that the chip is excellent at replaying sampled sound. Sampled sound is digitally captured and stored in the Interchange File Format (IFF). There are plenty of these sound files around, usually accompanying music software, and these can be loaded into the Amiga. Any IFF sound file can be loaded into any music program that accepts them, which is pretty well all of them. The sampled digital sound file is replayed through part of the sound chip known as the DAC (Digital to Analogue Converter) – this is the part that converts digital sounds into stuff that your ears can cope with.

The Amiga is fitted with two phono audio sockets at the back which can be connected up to a suitable hi-fi system to give your ears a real treat.

When it comes to MIDI, although the Amiga has no built-in MIDI ports – a vast oversight – there are no compatibility problems. Any MIDI interface will work with any MIDI software, they plug into the serial port.

STARTER PACKAGES

There are several packages around that can get you going with no additional hardware. These usually work by providing some sort of sequencer, but you don't necessarily have to go to the expense of purchasing a separate MIDI keyboard and interface to create your blockbusting tunes.

An extremely cost-effective method of doing this is to go for a public domain program. A gentle word of caution: although there are very powerful sequencers in the public domain they nearly always have two big disadvantages for the beginner. The first is that they deal with the song in terms of a table of numbers: these relate to the pitch of the note, the length of the note and what sound is playing at this time.

Sounds easy until you realise that it pre-supposes a little bit of musical knowledge, and also the ability to turn a tune that you have in your head into a string of numbers. Once a small sequence of notes is created you can 'nest' these within a larger control table that will repeat the sequence as many times as you want and wherever you want.

The second problem is that PD programs rarely support MIDI – that is they do not send out MIDI timing clocks for synchronising with external equipment, neither will they send out or accept any other MIDI data for that matter. This is a consideration to be borne in mind if you think you might expand at a later date.

If you think the above criteria fit your bill then by all means go ahead: look for programs like *Sound Tracker* or the Dutch *Zound Meister,* and remember, they are very cost effective!

If they smack too much of hard work then I'm afraid that you will have to spend a little folding money.

FUN TIME

If you are a complete novice but the concept of making fun music appeals to you, then go for *Instant Music.* This program has been around for some time now but is designed for the absolute amateur to create music

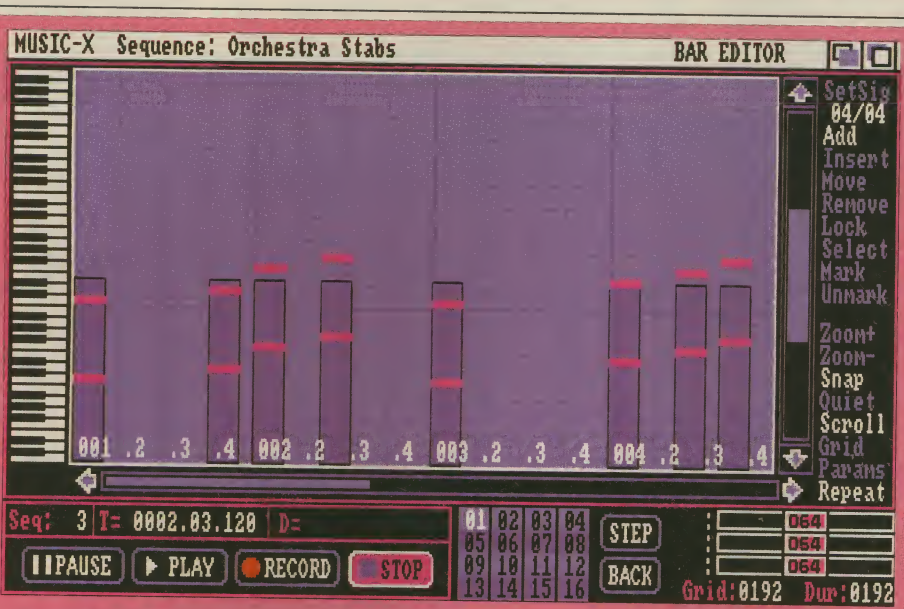
NOT A LOT OF PEOPLE KNOW THAT...

....most of the incidental music to the recent film *Batman* originally started life on an Amiga computer running a particularly well known sequencer.

...the internal sound chip on the Amiga is called Paula.

...instead of using sounds on IFF files you can make your own using a sampler program. Sampling used to cost £10,000-plus 10 years ago, but now you can do it for under £100 on the Amiga. Check out the AMAS sampler from Microdeal which has built-in MIDI, as does Pro Sound Gold from Eidersoft. These are just two from a wide choice of samplers with names like FutureSound and MasterSound.

...the new Amiga 3000, which is still in final completion stages, will *still* not have MIDI ports as standard. Some people never learn!



• *Visual editing the same piece. Notes are shown as upright bar graphs; the pitch is determined by the height.*

G ON THE AMIGA

literally by waving the mouse around screen areas.

One of its best features is called 'mouse jam'. The backings are all worked out for you, all you have to do is select the instrument you would like to play, start the tune off and wave the mouse around the screen as the brightly-coloured graphic score rolls past – the position of the cursor determines the pitch and length of the notes. It is worked out so you can't really sound bad, selecting notes that fit the chords. There are also other features that help you build up songs. It is rather like an Activity Centre – it helps you to learn about music and get interested with no previous knowledge. It comes with sets of sounds for you to use and is IFF-compatible so that you can use alternative sounds.

Stepping up the ladder a rung or two, there are several programs which might fit the bill. The choice is yours, depending on how you see your interest in music and of course how much you want to spend.

For creating sounds and sequencing in one package, the one to go for is Aegis' *Sonix*. Tried and tested, it has set a benchmark for other programs. It is divided into three sections.

The first is literally a synthesiser on screen. The slider controls are just like those found on older synthesisers with an ADSR sound envelope and filter (these determine the shape of the sound, whether or not it comes in fast, slow, builds up, fades away etc.). There is also an LFO (Low Frequency Oscillator) that can pulse the sounds or add vibrato to them and *Sonix* has a few extra little goodies like a built-in phaser – a device that swirls the sound around and thickens it up in the process. The other bonus is a window which allows you to draw the waveform you want. The sounds created can be stored in IFF format and used in other programs.

The other two pages are a play-along screen that turns the QWERTY keys into a musical keyboard, and a sequencer page. This could be the only stumbling block as the tunes have to be entered in traditional notation – crotchets, quavers and the like – and if that is not to your liking it's a bit tough!

There is no MIDI support either. Nevertheless a good program all round.

SELF CONTAINED

The cheapest program that is still self-contained but has the semblance of a professional piece of sequencing software, is the *Music Recording Studio* from Dr T, usually referred to as *MRS*. You can play pieces using the internal sounds and the QWERTY keys.

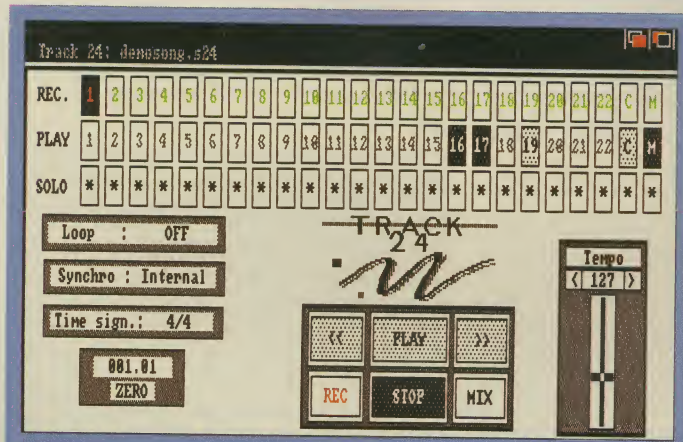
Using it is very simple. You play the first part, say the bass line, as you want it to sound. The program records this and then lines itself up ready for the next part for you to record over the top. The program presents itself on screen very much like a multi-track tape recorder and it can record on up to eight tracks, although of course if you are using the internal sounds you can only use four at any one time. You can mix and merge tracks, and editing is achieved from a data display. The controls are the standard controls found on sequencer; they look like those you find on any cassette machine – play, record, fast forward and back – plus a bar counter. It supports all aspects of MIDI and the files are upwardly compatible with other Dr T programs.

Still using internal sounds, Dr T will be launching a similar program but with far superior editing, this time graphically with some rather sophisticated controls for MIDI. Called *Tiger Cub*, it is already out for the ST, and the Amiga version only awaits the manual to be completed. It should be out in about four weeks, and the package will include a simple scoring and print out program.

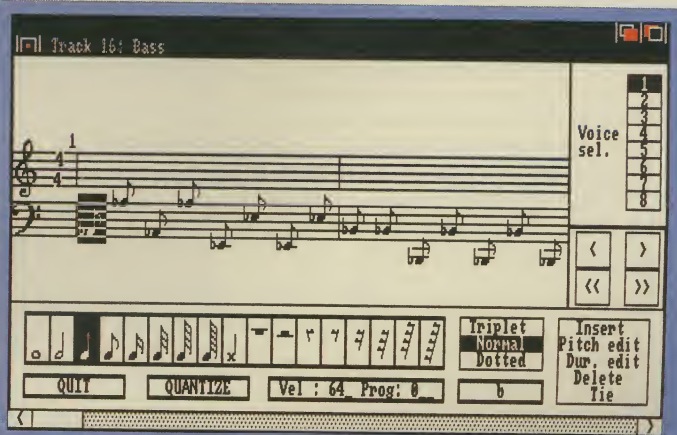
A junior version of *Music X* (see below) will be out in about two months' time. This too will support internal sounds, although the rub is that you will need a MIDI keyboard to play them. Costing the same as *Tiger Cub*, it makes the choice for the beginner quite hard.

MIDI SEQUENCING

The first all-MIDI sequencer that doesn't use the internal sounds is *Track 24* by the French software house Digigram. As the name implies, it uses 24 tracks, which can run simultaneously if you like, and has tape recorder style controls. MIDI is well supported, and there are lots of options to help you correct the notes with quantise features and program changes. Editing is done in traditional notation, although ➤



• *The main sequencing page layout for Track 24.*



• *Track 24 edits each track with traditional notation.*

editing other MIDI data like pitch bend, modulation and other controls is done 'invisibly' by software routines rather than on screen. It does have automated mix down of individual tracks, and this can be extended to altering tempos 'on the fly' for pieces that need to speed up or slow down as they are performed.

EXPENSIVE STUFF

I have concentrated on sequencers costing under the £100 mark so far, as this is usually the market that is most popular among beginners. If, however, you are quite a bit more serious about music using the Amiga then here is a quick resume of the upper end of the market.

The bigger versions of *Track 24* are called *Studio 24* and *Big Band*. These are still fine for the less impecunious novice as both programs have facilities for entering chords by name rather than by notes. *Big Band* is unusual in that it has a large auto arranging section which is very helpful if you are still into one-finger doodling but want to sound very proficient. Editing on both programs is the same as *Track 24*.

Scaling the financial ladder again we come to Dr T's professional product. This is known as *KCS*, which stand for *Keyboard Controlled Sequencer*. The latest version is version 3 and has all the bells and whistles you would expect from professional software with extensive sequencing and song arranging pages. It still supports internal voices and has some extremely sophisticated routines for quantising, automatic mixing, and synchronisation to video.

Where the Amiga scores heavily is the multi-tasking aspect. It is a real pain to find that half-way through working on a piece you need to change the sound of the synthesiser. The sound you want is probably stored on a voice file. Now with most other computers you would have stop work, reload the voice editor for the synth and load up the voice, stop and then start all over again with the sequencer. The Amiga is very happy to have several programs hanging around just waiting to be called up – if you have the memory.

Dr T has created what it calls its Multi Program Environment. The thing here is that data and files can be transferred between the programs if both are resident in the computer. For example you can flip to the sound editor while you are running the sequencer and any changes you make to the sound are duly recorded in both the sequencer and the voicing program.

Other advantages come with scoring and notation packages, which Dr T is about the only software house at present to market in a big way. *The Apprentice* and *Professional Copyist* are both available for the Amiga, and again can be put in the background and files automatically ported internally from one to the other. It is also worth noting that Dr T probably has more editing programs for synthesisers than all the other software houses together, with one notable exception.

XTRA SPECIAL

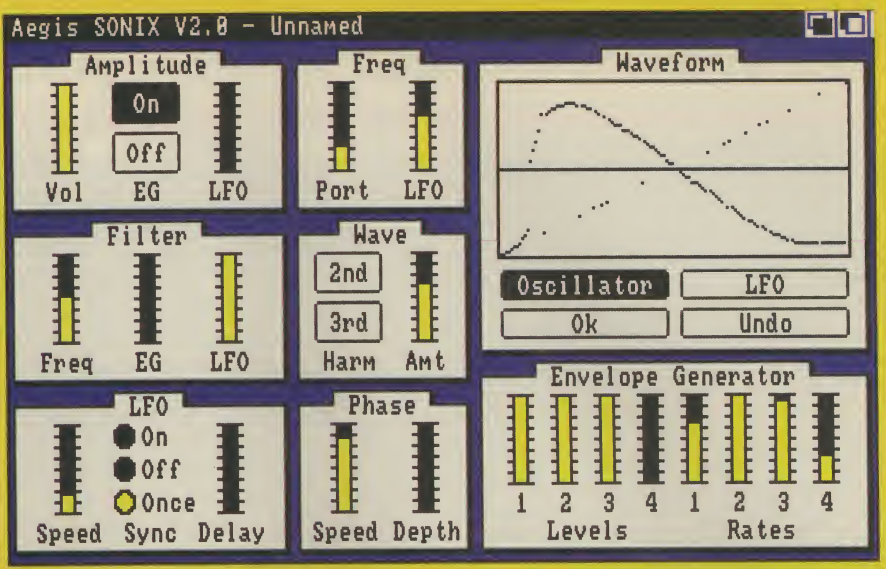
Music X from Microillusions is really the first piece of music software that has been designed totally for the Amiga. It is a complete environment all on its own with sequencing, editing – both visual and data stream – some very clever quantisation routines and full MIDI controls. It doesn't stop there, though, as the program also contains modules that can either be called in or can be resident in the memory if you have the room.

These modules will remap and filter MIDI as it comes in from your keyboard in every conceivable way. They can also turn one keyboard into a device that can control several other MIDI instruments by what is known as 'keyboard mapping' – that is allocating areas of the keyboard to different MIDI channels with various controlling options.

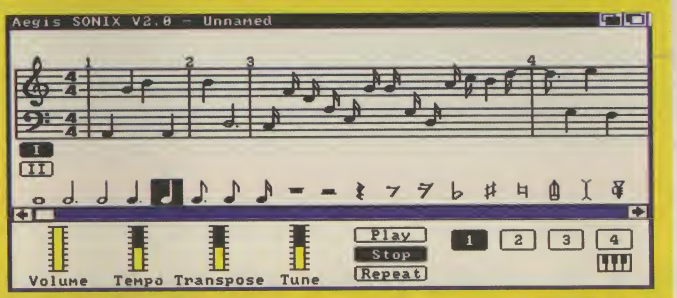
There is a complete library page for internal sounds, and it has a universal editor page with templates that you can either set up to program your synth and file away the sounds, or you can contact Microillusions which is currently working on editors for well over 100 synthesisers.

Music X is fully compatible with video and film synchronisation, although you will need to shell out £700 for the special interface. Version 1.3 is available now but there will be upgrades to this in about the next six months. As mentioned above, *Junior Music X* is soon to be available on the Amiga, which is essentially a cut-down version with less on the modules. It can be upgraded though.

To complete our look at the top end there is an Amiga version of Steinberg's *Pro 24* available soon. *Pro 24* itself was one of the first professional sequencers and was ST based. However the Amiga version is a complete re-write, and has score display and editing, graphic editing, quantise, clever keyboard mapping and channel filtering, and in short is a serious contender for professional purchasers. ■



• *Sonix gives you ultimate control over the sound chip – just like a synthesiser.*



• *Use traditional notation to sequence your songs, up to four sounds at any one time and change them as you go along.*

• *Turn the Amiga keyboard into a musical instrument using IFF samples or your own sounds as instruments.*

PRICES AND SUPPLIERS

For public domain programs contact:
Amiga PD Library • 0742 588429
UK Amiga Users' Group • 0533 550993
Prices start at about £2.50 per disk

***Instant Music* • about £20 • Electronic Arts • 0753 49442**
***Sonix* • £59 • HB Marketing • 0895 444433**
AMAS sampler • £79 • Microdeal • 0726 68020
ProSound sampler • £75 • Eidersoft • 0234 273000
***Pro 24* sequencer • £285 • Evenlode Soundworks • 099 389 8484**
***Track 24* • £75 • *Studio 24* • £120 •*Big Band* • £180 • Soundbits • 021-733 2063**

Dr T's *MRS* • £59.95 • *Tiger Cub* • £99 • *KCS* • £299 • For all Dr T's programs call MCM • 01-724 4104
***Music X* • £199 • *Junior Music X* • £99 • Microillusions • 0480 496497**

BEST BUYS

UNDER £100
MRS from Dr T offers a comprehensive start for a beginner with no extra equipment, but has MIDI option

OVER £100
***Music X* is the most comprehensive package and works out a darn sight cheaper than buying individual programs.**

NEXT WEEK

Next week it is the turn of the ST to come under the spotlight. If there are any points that you think I've missed or queries that you want to raise, please write to me at *New Computer Express*, Future Publishing, Beauford Court, 30 Monmouth Street, Bath BA1 2AP, *before* May 4 as then I can be sure of answering you in print. Mark all letters for my attention. I should also point out that all the programs mentioned above have been or will be reviewed and considered in full in our sister magazine *Amiga Format*.

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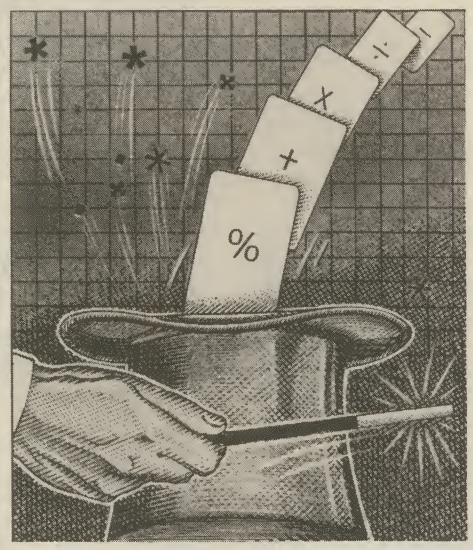
BETWEEN THE SHEETS

Tim Smith concludes his tips and tricks on BASIC applications programming by looking at the design decisions you need to make when you write your own spreadsheet

Spreadsheets are dark, mysterious fields of numeric and textual details. Unlike databases or word processors, people tend to become obsessional about their spreadsheets, spending hours re-ordering calculations, cells and formulae. People who don't use them merely see a screen, a grid and some disconnected entries, then go back to the envelope they used before.

PRISONER CELL BLOCK A1

The spreadsheet and calculator are distantly related cousins in the same way as the amoeba is related to your uncle Fred. While the calculator will carry out mathematical operations, even geometric finaglings, the spreadsheet can go one better. It deals with the 'what if?' propositions.



You might have found yourself wondering, while ploughing through the family finances, 'What if interest rates rise again in the next week, before pay day but after the rent has been paid?'. Then, with a half of one per cent rise in the offing, you have attempted to sort out all the bills, the finance repayments, the birthday present list and whether or not you'll be able to afford one or two pints of Old Thigh Strangler at the Star and Garter.

Five hours later you might have got the calculations worked out, but some of them might be wrong and you will have definitely missed last orders.

With a spreadsheet, all you need do is to change the cell, for the sake of argument cell A12, which contains the interest rate. Any other cells which include this in their formulae will also be affected. For example, cell A12 holds the current interest rate of 15 per cent, cell B14 holds the monthly mortgage repayment of say £440, cell C11 holds the monthly repayments on the Amigic-STE-550-Coupé, say £40. This last cell would be in the form of a formula. The formula would comprise the outstanding sum for repayment (held in another cell), the interest rate and any insurance payments you make.

A quick change to the interest rate cell would take effect on the payment cell, and bingo! – you have saved yourself a lot of time and irritation.

PROGRAM GUIDE

So, is all this wonderment possible from BASIC? The answer is a resounding yes. You might not get the same polished grids which accompany such sheets as *SuperCalc,* Lotus *1-2-3* or Microsoft *Excel* – but equally you won't have to fork out the same dosh. All of the aforementioned will set you back a pocket-wilting £200-300.

You go about designing your spreadsheet in exactly the same way as you would any other program. Pen, paper and some thinking about exactly what you want from the program. You will tend to find that a zappy screen display will use up an immense amount of valuable memory and code. Keep it simple. You will also find that you don't actually need 2,000 cells in which to carry out your calculations, 100 will normally be ample. This is especially true if you build in a save sheet routine.

This will allow you to use one sheet for family finances, one for computer costs, one for long term planning and so on and so forth. You will also need to build in the ubiquitous 'Save to ASCII file' format This means that you can tidy up data using a word processor and then print out clean reports for the bank manager. Don't spend your time designing file crunching routines. Any file which is big enough to need crunching is too big for a BASIC spreadsheet to be handling in the first place.

All this talk about files must have lead you to the question, what do I need files for when all the work is done on a nice flat screen in cells? Simple answer, any spreadsheet is merely a graphic representation of a file. Give the file a random input/output setting and treat it has a single record with 100 fields. As far as the sheet is concerned, cell A1 is at the top-left of the screen. As far as the file is concerned cell A1 corresponds to the first of your 100 fields. Cell J10 is the last and so on.

At this early stage you really should not worry about snazzy output. What you want from a spreadsheet is immediate feedback to your 'what if' questions. Entering tans, cosines and other data is as possible as any other calculations, but do you really need them? The answer to that is most likely to be no way José. Your spreadsheet is your financial adviser and that's where it is at its happiest and most useful.

If you really do want to be over-the-top about this, you might like to include graphics output as well. Once you have the figures entered and the formulae working, there is nothing to stop you from creating some graphs, charts and other show-off functions. The question you really need to pose yourself when programming anything, however, is 'Is this routine really necessary?'. Have fun. ■

THE CODE BOX

How do you open the file which is the heart of your sheet? Simple, try the way shown here for a start. I'm sure that other programmers have quicker, slicker ways of doing it, but this one serves its purpose:

Of course, if you want bigger sheets you will need to alter the parameters. It might also be an idea to use the APPEND, function but this should give you a rough guide as to formatting your spreadsheet.

```
10 INPUT "Name of sheet"; name$
20 INPUT "Drive to save to... eg A:, B: ";drive$
30 OPEN drive$+name$,#1
40 FOR a=0 to 9
50 FOR b=0 to 9
60 WRITE #1,a$(a,b)
70 NEXT
80 NEXT
90 CLOSE #1
```

• An example routine to save a spreadsheet to disk.

CHECK LIST

What you need to have ready when designing and programming your spreadsheet are the following:

- **File save and load routines**
- **File open and close**
- **Text, numeric and formula entry. (These are simple as long as you only ever enter string variables which you can then convert for calculations later).**
- **The basic grid – do you really need immediate graphic representation or are the calculations the most important to you?**
- **Printer output – is this necessary or could you get away with exporting files to a word processor to save time and code?**

illustrations Jerry Hoare

EXPRESS MAIL

Britain's liveliest computing forum – packed with comment, controversy and conflict. Write and tell us what you think! Reach us at: *Express Mail, 30 Monmouth St., Bath BA1 2AP* Sorry, no personal replies, even with an sae. This week's replies written by Keith Pomfret.

A poll tax payer writes

It was with considerably glee that I learned that I had managed to annoy Stephen King ('My tirade is better than yours' *Express* 74). He certainly doesn't seem the sort of chap one would want to have agreeing with one.

For the benefit of Mr King (a Labour supporter *and* a Mac user, oh dear!) and any others completely bereft of a sense of humour, let me make two things clear:

1. I don't really believe that socialism causes brain damage. The fact that the two conditions are so often associated is obviously mere coincidence. I was just trying to illustrate, in reply to the editor's expression of puzzlement that he had not received vociferous replies from 'rabid Tories' to his political editorial of some weeks earlier, that perhaps he hadn't been taken terribly seriously.

As an interesting aside to the political debate, and apropos of your crushing rejoinder to my earlier letter; the old lady and I have just received our community charge bills, the combined total of which comes to £110.18 *less* than last year's rates. *(Give the man a cigar – Ed)*

2. I don't really have anything against the Macintosh, provided I'm not required to use one myself. My point was that leaving a Macintosh man in charge of Tech Tips was a flawed policy. Incidentally, how *do* you fit a colour display into a Mac.

I am, of course, aware that Future Publishing prints everything via Quark *Xpress* DTP on a network of Mac IIs, and that "even screen shots grabbed from other machines" go through Macs before printing. In fact, I have had hands-on experience of Future's DTP equipment, and actually wrote some of the software you use to grab PC screens and convert them to a format the Mac IIs can digest. I can, therefore, claim that my opinion of the Macintosh is both well-informed and professional. That Mac addicts and other socialists find my views disagreeable is perfectly satisfactory.

Iolo Davidson, Tetbury, Gloucestershire.

Ho hum, Iolo. Am I right in guessing that you might be a wind-up merchant? I thought so. We're all very glad to hear that you've saved £110 on the community charge and trust that you will use the aforesaid in a sane and sensible way (said the entire staff of *Express*, thirstily). We won't be continuing the 'My Machine' debate, but as you're such a helpful rich and clever chap, why not send in your letters on a 3.5-inch 720K PC disk. We will then feed this into the clever colour (yup, colour) Mac and put our typist out of a job.

Rodent rant

Continuing the 'My mouse mat is better than yours' debate, we must, at this point, ask ourselves; Is a mouse mat, horizontally speaking, really necessary?.

As far as the small mouse ball picking up debris from the desk surface is concerned, the answer can only be to ask ourselves another question: Is it better for the mouse's ball to pick up the debris from the mouse mat or from the desk?.

This debate can take one of two directions at this point, depending upon whether or not you are using a common or garden mouse mat or a more sophisticated anti-static type.

Obviously, it must be better for the mouse to pick up debris which has been rendered harmless, as far as static is ➤

War cry

After reading many letters on the 'My computer's better than yours' theme in this, and various other, publications, I think it is time the phrase was accepted into computer jargon. Of course it would need the traditional shortening and abbreviation treatment – MBY perhaps. Although this could be confused with Moronic Bleating and Yelping, the general definition of the subject can still be ascertained.

Don't think I'm dismayed at these letters, in fact the opposite. I find them more interesting than *Coronation Street* and better written than *Neighbours*. It's the replies that annoy me with the "if the machine fits the owner's requirements and he's happy with it, then it's OK" response.

Why disillusion these good people, their machine *is* vastly superior.

The proof was witnessed by millions as we watched the disgusting scenes in central London on March 31. Anarchist yobs were seen smashing shop windows and looting. These people disregarded the Atari stock to steal only Amiga equipment. It was initially thought that they seized the Amigas for their superior graphics capability and extensive software backup, but it later became apparent that they took them for game playing applications only. Disappointment was rife among the mob when the machines lasted for only one game of football before becoming 16 bits (or pieces).

This, combined with the rumours that the Pentagon is about to announce that the Stealth bomber is, in fact, an ST with a wings 'n' wheels expansion (rockets require hard disk option), leads me to believe that the Amiga land forces are about to meet the Atari air force (*Flight Sim II* trained) in a bloody and bitter confrontation.

I have heard of at least one software house rushing to complete a strategy game (along the lines of Risk) in which Amiga and ST owners battle for world domination. Trying to cash in on the pre-confrontation fever and exploit the smouldering Cold War tension is, in my opinion, only adding fuel to the fire.

I would respectfully ask, on behalf of the non-ST or Amiga-owning world, that the combatants restrict themselves to conventional warfare and avoid chemical, biological and nuclear engagements wherever possible.

In fact, with all the major forces in home computing threatening us with imminent launches of new and enhanced hardware, would it not be sensible for MBYs to do the same?

So keen are they to prove their machine's superiority, I feel that if they actually launched their equipment at an opponent, the resulting damage, or lack of it, would clearly determine the champion of computers.

This, combined with the launching of Bob Gleadow into his Commodore counterpart (is it still Joseph Goebbels?), should provide a satisfactory culmination to the MBY's conflict; although the simultaneous launching of Alan Sugar into Sir Clive may passify a few of the fringe MBYs – will Sir Clive's launch be more successful than that of the C5 or will Bob Gleadow's paunch be more aerodynamic than the C5 was at its launch? These questions remain unanswered.

I have, however, considered the ballistic qualities combined with the impact resistance of my Amiga, and am willing to meet any ST owner who possesses an industrial-strength rubber-band, on a field of honour, any afternoon at dawn, next week.

Stop press: Bob Gleadow emerged from a secret press conference today answering rumours that the new ST launch system throws the machine at least five feet further than the opposition, with the statement: "You'll have to wait and seeeeeeeeee!! Plop."

C Aldridge, Braintree, Essex

I'm not sure about MBYs. Perhaps, 'My Own Machine is Better than Yours', giving us MOBYs, which as well as being a word, is open to much more innuendo and ribald laughter.

We've recently commissioned a professional watcher of *Home and Away* to write a couple of letters a week, so the rivetting prose quotient should keep your pharmacist in business for a little while yet.

The Amigas that were looted must have been the first batch of A3000s that have been promised for so long. Oh well, patience is a virtue, as the man from Commodore said. I don't know what you've been imbibing to think that the ST could be a Stealth bomber, the infra-red footprint from its power supply would set off every early warning system this side of Antibes.

As for the ST air force and the Amiga army, don't forget the senior service. Who? you ask. The Oric Navy – sunk without trace.

illustrations Jerry Hoare

concerned, than to pick up the highly-charged particles more usually found on the desk.

This argument falls down flat, of course, where the question of coffee or vodka is concerned, and we must, therefore, consider the merits of the floppy, spongy mouse mat over the stiff, furry-surfaced type. The absorption qualities of the former are obviously welcome when considering the coffee question: the mat can easily be wrung out into the mug and less moisture actually finds its way into the pointing device.

The vodka is different, firstly because of its volatile nature, having a definite therapeutic effect upon the dirtiest mouses. Most importantly, though, again because of its corrosive properties and its ability to dissolve the rubber backing of the mat, the flavour is impaired after being wrung out. Especially if the last remnants of the coffee were not eradicated. Here, I'm sure everyone would agree the hard, non-absorbent mouse mat comes into its own.

Gilbert Gosseyn, Agent from The Machine

You obviously haven't got the latest attachment on your mouse.

Mouse debris is a thing of the past here at *Express* with the Acme all-purpose debris destroyer. Attached to the leading edge of the rodent is a combined Aquavac, stiff broom and Remington pullover-fuzz remover. This cunning device first sweeps the mat as the mouse is pushed across, then removes all the fuzzy blobs and finally washes deep into the pile. On-board filters recycle coffee and vodka and bingo, Robert is your father's brother. A clean rodent rug and a debris-free squeaker.

The only problem we've experienced so far is fumes from the 14-litre diesel under the desk that drives it.

Hear ye!

I would be very grateful if you could inform your esteemed readers that the Olivetti PC1 user group can supply the hardware-starved PC1 user with a hard disk unit. This 21Mb self-powered unit is the only one currently available in the UK today which will work with the standard PC1. The cost is £289. Users who are interested can contact the group on 0924 892106.

Many thanks for your help and good luck with your excellent magazine.

Mark C Blackall, Olivetti PC1 User Group, Normanton, West Yorks

Dear Esteemed Readers, The Olivetti PC1 user group can supply a hard-disk unit for the PC1. Telephone number as shown.

I was a slave

While reading a letter from Mr Jimmy English (*Express* 74) I was amazed how blatantly biased a letter could be. I recently left school and spent seven months at the Newport ITEC. In that seven months I was only entered for one exam, which was a City and Guilds exam, and was so easy my four-year-old brother could have passed it.

Then, after I had been at the ITEC for three months, I was sent to the local civic centre, on work placement, as a 'Trainee Computer Programmer'. While there I didn't touch a computer, but I did learn how to take notes around the building and I can now make a smashing cup of tea.

After four months doing this I finally quit the ITEC and went back to school – incidentally, I have given up hope of a career in computers and now hope to go to London to be a nurse.

Please print this letter to warn other people of the numerous dodgy Government training agencies, as the time I spent at the ITEC was the biggest waste of seven months you could possible imagine – unless you want to learn to make tea.

R Edmunds, Newport, Gwent

You graphically show the other side of Mr English's coin. Your main cause for complaint seems to be that once on a placement, you were used as a gopher and tea maker.

It's a shame that companies and organisations are able to get away with this, but until enough trainees stand up and assert their right to be trained, that will be the case. In times past the training scenario was well ordered through the indenture and apprenticeship schemes, but that seems to have faded into a sort of muddy grey area.

The only way to avoid this exploitation is to report instances as soon as they happen.

Drive dismay

I am writing to inform you of a very important and disgraceful thing which is happening to Atari owners.

I recently sold my Atari 1040STFM and bought an STE to, supposedly, upgrade. Can you imagine my horror when I plugged in my Cumana 3.5-inch drive only to find it would not work (I only bought the drive in November for over £100) so I immediately phoned the Atari help line.

Although the chap was very nice, the news was terrible. He told me that "some of the 'older' Cumana drives do not work with the STE." I only bought it in November.

Anyway, the outcome was that he said I would have to contact Cumana for help, although I fail to see what they have to do with this. I feel everyone should know about the situation because, as far as I am concerned, Atari has cost me enough hard-earned cash. I was prepared to write off some software, but a brand new drive is a different matter.

Please can your mag offer any advice as things are getting out of hand. I read of all the problems before deciding to buy, but this was never mentioned.

S Carnegie, Glasgow

Buyer beware. It may sound like a stable door after the horse remedy, but the only way to avoid this situation is to check before you upgrade. If your new configuration isn't compatible with your existing hardware, find out if it can be converted or modified. If it can't then at least you'll have the choice before you spend your hard-earned.

If you have been misled as to the abilities or compatibility of a product by the vendor, you have recourse in the Sale of Goods Act, but if something doesn't work because you didn't ask, it's your fault. And by the way, *Express* did report that some external disk drives didn't work with the STE. ■

NEXT WEEK

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Make your Amiga 500 into an A200 with an upgrade kit

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Our comprehensive music software series turns to the Atari ST

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